GT 210 A

Oil-Gas Fired Hot Water Boiler

English
02/12/07

Please Read & Save this Manual for Future Reference

Assembly, installation and maintenance manual

Warning:
Before putting the boiler into operation read this manual carefully.

Warning:
The operating manual is part of the documentation that is delivered to the installation's operator. Go through the information in this manual with the owner/operator and make sure that he or she is familiar with all the necessary operating instructions.

Notice:
This manual must be retained for future reference. Improper installation, adjustment, alteration, service or maintenance can cause injury, loss of life or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

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De Dietrich

Guideline of Notices

Warning:
indicates presence of hazards that can cause, if not avoided, severe personal injury, death or substantial property damage.

Caution:
indicates presence of hazards that will or can cause, if not avoided, minor personal injury or property damage.

Notice:
Application comment for optimum use of equipment and adjustment as well as useful information.

Reference to an other instruction book.

Observe the following symbols

DANGER
due to explosion of gas.

- Work only on gas components when you have a license to do so.
- Note that the assembly of gas and vent connections, the initial start-up, the electrical connections, the maintenance and service can only be performed by a licensed service contractor or technician.

DANGER
due to electricity.

- Prior to doing any work on the heating system, disconnect all electrical power to the boiler at the emergency switch.
- It is NOT sufficient to shut off only the boiler control!

CAUTION!
SYSTEM DAMAGE
due to improper installation.

- Observe local and state codes as well as common industry practices during the installation and operation of the heating appliance.

CAUTION!
SYSTEM DAMAGE
due to inadequate cleaning and maintenance.

- A boiler cleaning and maintenance should be performed annually. Verify complete system operation at the same time.
- Correct the problem immediately to prevent damage to the system!

Caution:
Refer to User's Manual regarding the carcinogenic hazard of crystalline silica that may be found during installation, servicing and removal of this boiler.

Safety Considerations

Please observe the following safety instructions.

Read this manual carefully.

Correct installation and adjustment of the burner and the control panel is a precondition for safe, efficient operation of the gas boiler.

Read this manual and the specifications on the safety label carefully before attempting to put the burner into operation.

Do not store or use gasoline or other flammable liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS:
- Do not try to light any appliance.
- Do not touch any electric switch, do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the Fire Department.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

Warning:
Improper installation, adjustment, and/or operation could cause carbon monoxide poisoning resulting in injury or death.
This product must be installed and serviced by a professional service technician who is experienced and qualified in hot water boiler installation and gas combustion.

Caution: Strict compliance with these instructions is a precondition for the correct operation of the boiler.

IMPORTANT
Service on this boiler should be undertaken only by trained and skilled personnel.
Keep boiler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.
Do not place any obstruction in the boiler room that will hinder the flow of combustion and ventilating air.
Read these instructions carefully before proceeding with the installation of boiler. Post instructions near boiler for reference by owner and serviceman.
Maintain instructions in legible condition.

"Installation of this equipment must be in accordance to all local and national codes or authorities having jurisdiction."
[Canadian Installations]
CSA B149 for gas fired boilers & CSA B139 for oil fired boiler
[USA Installations]
NFPA 54/ANSI Z223.1 for gas fired boiler & NFPA 31 for oil fired boilers.

The boiler must be connected to a venting system that will safely discharge all flue gas to the outside in a safe and effective manner.

Do not use gasoline, crankcase draining, or any other oil containing gasoline.

The boiler is certified to burn only natural gas, # 2 fuel oil and propane. Never burn garbage or paper in the unit, and never leave combustible materials around the boiler.

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Regulations and guidelines

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, **ANSI Z 223.1 / NFPA 54**. In Canada, installation must be in accordance with the requirements of CAN/CGA B149.1 or 2 Installation Code for Gas Burning Appliances and Equipment. Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, **ANSI/ASME CSD-1**.

Install CO detectors per local regulations. Boiler requires yearly maintenance, see "Connecting the burner", page 24.

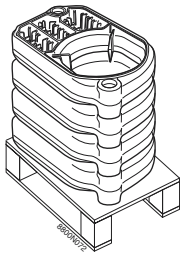
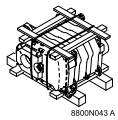
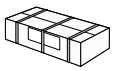
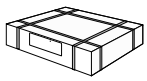
Only a qualified installing contractor may carry out the installation, the initial start-up, the connection for fixed gas and vent gas, and conversion to another type of gas. The hot water distribution system must comply with the applicable codes and regulations. When replacing an existing boiler, it is important to check the entire hot water distribution system to insure safe operation. Maintenance and cleaning must be carried out at least once a year by a trained service technician. The entire installation must be tested for proper operation. Any defects detected must be fixed immediately.

General

The boilers of the **GT 210 A** range are automatic independent hot-water boilers designed for connecting to a flue which require a separate fuel oil or gas burner.

1 Uncrating

Upon arrival, check shipment to ensure all parts have been shipped. Inspect all items for delivery damage. Report all damage and shortages to the delivery carrier. Report any damage and shortages to the Distributor.

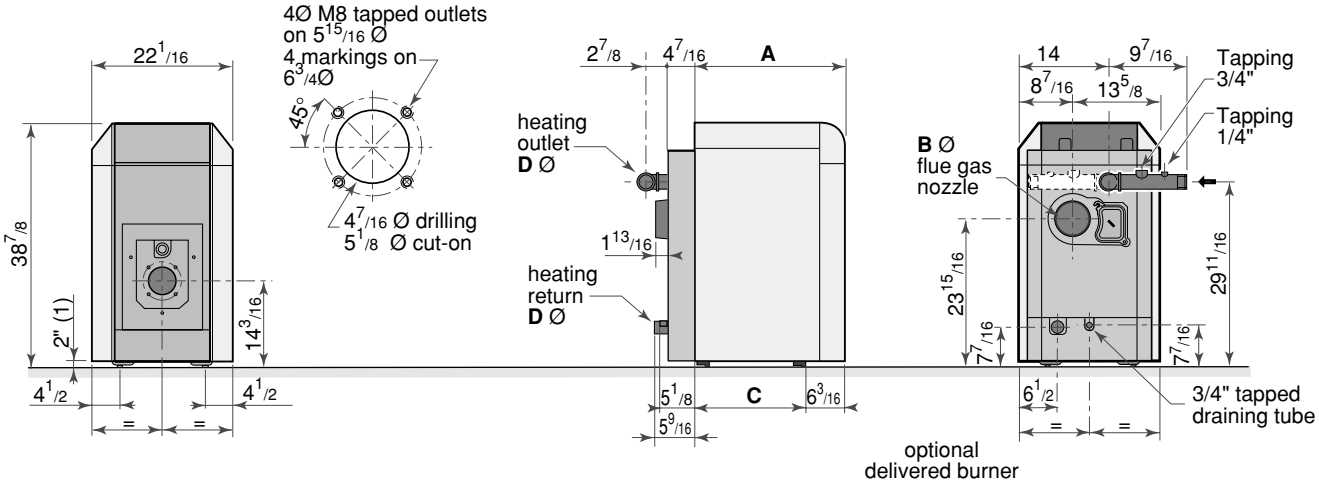
Boiler	GT 214 A	GT 215 A	GT 216 A	GT 217 A	GT 218 A	
• Unassembled boiler body						
- front section	1	1	1	1	1	
- intermediate section	2	3	4	5	6	
- rear section	1	1	1	1	1	
- set of assembly rods	-	-	1	1	1	
- accessory package	DR 64	DR 65	DR 66	DR 67	DR 68	
• Assembled boiler body with accessories	DR 84	DR 85	DR 86	DR 87	DR 88	
Control panel	DR 90	DR 90	DR 90	DR 90	DR 90	 8800N075A
Casing	DR 74	DR 75	DR 76	DR 77	DR 78	 8800N073A

2 Technical specifications of boilers

Item		Unit	GT 214 A	GT 215 A	GT 216 A	GT 217 A	GT 218 A
Firing Sequence			Consult Burner Technical Data				
[CSA] - Gas Input		MBH	173	224	274	324	361
		kW	50.7	65.7	80.3	95.0	105.8
[CSA] - # 2 Fuel Oil Input		US GPH	1.20	1.55	1.90	2.25	2.50
[CSA] - Output [Gas-Oil]		MBH	147	190	233	276	306
		kW	43.1	55.7	68.3	80.8	89.8
[NET] - Output [Gas-Oil]		MBH	128	165	203	240	266
Cast Iron sections		#	4	5	6	7	8
Flue-way baffles		#	3	2	2	2	2
Water capacity		US Gal	9.5	11.4	13.2	15.1	16.9
		Liter	36	43	50	57	64
Water resistance [Δt = °F]	18° F	Ft. H_2O	0.82	1.34	1.99	2.77	3.4
	27° F	Ft. H_2O	0.365	0.596	0.887	1.23	1.51
	36° F	Ft. H_2O	0.204	0.335	0.498	0.693	0.85
Combustion chamber Dimensions	Diameter [equivalent]	Inch	12.17				
		mm	309				
	Depth	Inch	17.6	22.6	27.6	32.6	37.6
		mm	446	573	700	827	954
	Volume	ft^3	1.1653	1.4831	1.8009	2.1188	2.4366
		m^3	0.033	0.042	0.051	0.060	0.069
MAWP [Water]		PSI	ASME IV Rating Class 30 - (60 PSI) [See Canadian Provincial CRN approvals]				
Min. Safety Relief Capacity		MBH	147	190	233	276	306
DR 90 Panel	Electrical connection	V/P/H	120/1/60				
	Max. Water Temp. Safety Limit [MR]	°F	230				
		°C	110				
	Operating Water Temperature Range	°F	86 - 185				
		°C	30 - 85				
Chamber resistance		Inch w.c.	0.08 - 0.16	0.20 - 0.24	0.08 - 0.24	0.16 - 0.24	0.24 - 0.32
		mbar	0.2 - 0.4	0.5 - 0.6	0.2 - 0.6	0.4 - 0.6	0.6 - 0.8
Gas-Vent Category		#	I, II - III or IV				
Boiler Vent connection		Inch	6	6	7	7	7
Weight (dry)		lb	481	567	655	741	827
		kg	218	257	297	336	375

- CSA - MBH Output based on Thermal Efficiency Test According to ANSI Z21.13a/CSA 4.9a-2005
- [NET] MBH Output Factor 1.15, Allowance for Piping and Pickup Losses
- Chamber Resistance Based on Neutral Chimney-Vent Pressure
- Gas Vent Category Based on Several Factors [CO2 content, Vent Pressure & Net-Flue Gas Temp]
- Approved for Direct-Vent, Use Only Approved Venting as Listed
- Natural Draft Applications, Approved for Type L vent [Gas-Oil] or Type B Vent [Gas Only]
- Conversion Btu to kW = 3,412 Btu per kW
- All Models are Design Certified & Eligible to Bear Approval Marking as Shown.
- All Models Certified to Fire; # 2 oil, Natural & Propane Gases. Consult factory for Available Burners.
- All Models Comply and Certified in Accordance to the latest Canadian & US standards
- To Obtain Current IBR Ratings, consult their publications and website.

3 Main Dimensions



Rp : Tapped
R : Threaded

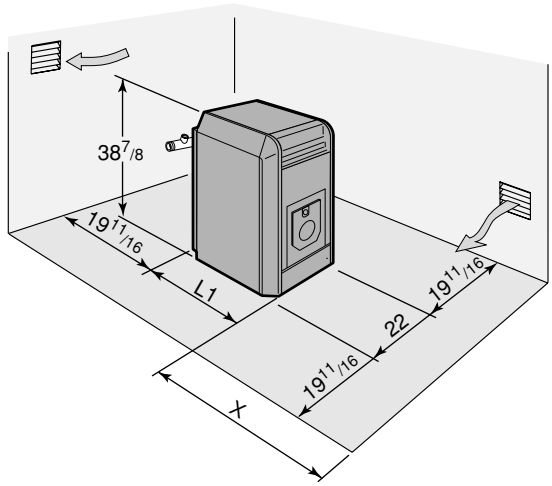
(1) Adjustable feet: basic height 2" with $1^{3}/_{16}$ to $2^{1}/_{2}$ adjustment range.

	A	B	C	Ø D
GT 214 A	$23^{5/16}$	6	$16^{11/16}$	R 1 1/4
GT 215 A	$28^{5/16}$	6	$21^{11/16}$	R 1 1/4
GT 216 A	$33^{5/16}$	7	$26^{11/16}$	R 1 1/2
GT 217 A	$38^{5/16}$	7	$31^{11/16}$	R 1 1/2
GT 218 A	$43^{5/16}$	7	$36^{11/16}$	R 1 1/2

1 Location

Sufficient space shall be left clear around the boiler for servicing and clearances to combustibles

The values provided in the drawings are in inches below are the minimum recommended dimensions for providing easy access around the boiler. Dimension 'X' consult burner + 24 inches for servicing.

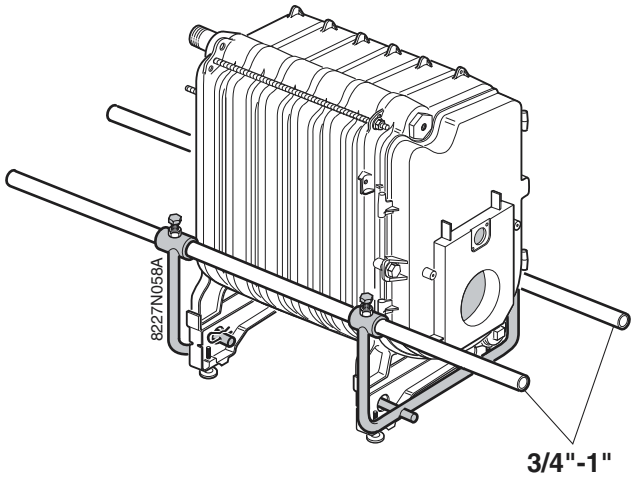


	L1
GT 214 A	29 11/16
GT 215 A	34 11/16
GT 216 A	39 11/16
GT 217 A	44 11/16
GT 218 A	49 11/16

Boiler must not be installed on a combustible flooring or pad, do not install on carpet.

To facilitate boiler installation, a handling tool (package BG 45, no. 8218-7723) may be used as shown opposite to move the heating elements or place the boiler on the calorifier.

The two 3/4" or 1" pipes are not supplied.



2 Combustion Air Supply

The location of air inlets in relation to the high ventilation openings shall ensure that the air is renewed in the entire volume of the boiler room. The ventilation shall comply with any applicable national or local regulations.

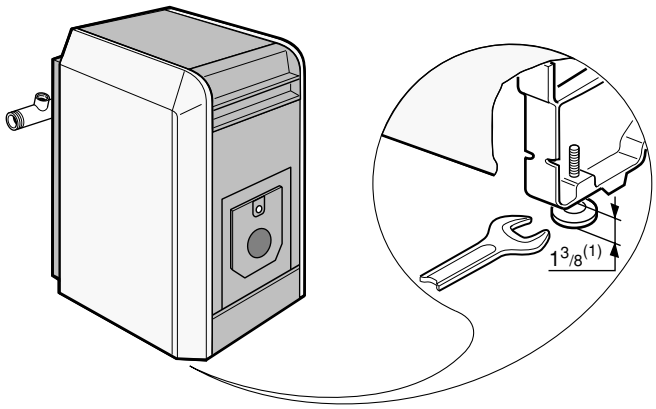
Please note that boilers installed in or close to rooms in which the atmosphere is polluted with chlorine or fluorine compounds may be subject to high corrosion. For example: hairdressing salons, industrial premises (solvents), cooling equipment etc. Boilers installed in such locations shall not be covered by the warranty.

3 Levelling

Level as shown in the drawing by means of the four adjustable feet (supplied in the bag of fasteners of the casing) put in place while assembling the boiler.

(1) basic height 1 3/8,

adjustment range: 1 3/8 - 2 1/2



4 Water connection

Important recommendations for connecting the boiler to the heating circuit and the drinking water supply

The boiler must be equipped with pressure relief device, the relief capacity shall be sized for at least the same capacity of the appliance [mbh], the relief valve shall be piped to the nearest drain, and piped to avoid potential personal injury or property damage, consult local codes for additional requirements. The relief valve must be certified by AMSE/CRN.

Hot water boilers installed above the radiation level or where required by code, must be equipped with a low water cutoff device.

The boiler and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi [3.5 kPa]

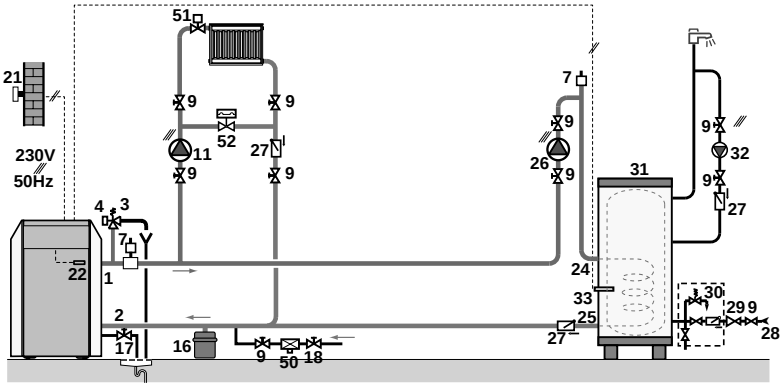
The boiler must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi [3.5 kPa]

Suitable protection against water indigestion must be provided to the boiler control system and burner.

The following examples do not intend to cover all the possible cases of installation. They are only provided to draw attention to the basic rules which must be respected. Some control and safety devices have been represented, but it is finally up to the fitter to decide which control and safety systems are required for each specific situation. In any case, comply with applicable codes of practice and local or national regulations.

4.3 Examples of installation

Boiler must not be installed on a combustible

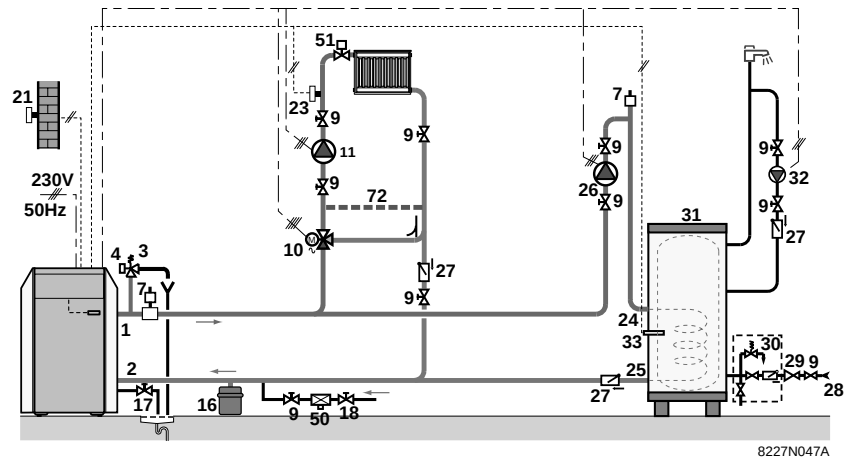


Standard DR 90 control panel heating only

Option - MB1 A for DHW production

Option - SV-matic 321 DHW & outdoor sensor
Option - SV-matic 331 DHW & 3-way valve - Outdoor sensor

2. Installation with 1 circuit with mixing valve



1	Heating flow
2	Heating return
3	3-bar safety valve
4	Pressure gauge
7	Automatic bleeder valve
9	Valve
10	3-way mixing valve
11	Heating pump
16	Expansion vessel
17	Draining tap
18	Heating circuit filling valve
21	Outside temperature sensor
22	Boiler sensor
23	Mixing valve outlet temperature sensor
24	Primary input of dhw calorifier exchanger
25	Primary output of dhw calorifier exchanger
26	Domestic hot water filling pump
27	Nonreturn valve
28	Domestic cold water inlet
29	Pressure reducer
30	Sealed safety device calibrated to 7 bar
31	Independent dhw tank
32	(Optional) dhw looping pump
33	Dhw temperature sensor
44	Limiting thermostat
50	Disconnector
51	Thermostatic valve
52	Differential valve
65	Heating circuit which may be at a low temperature (radiators or floor heating)
72	Hydraulic bypass required with floor heating systems

*

Tools required :

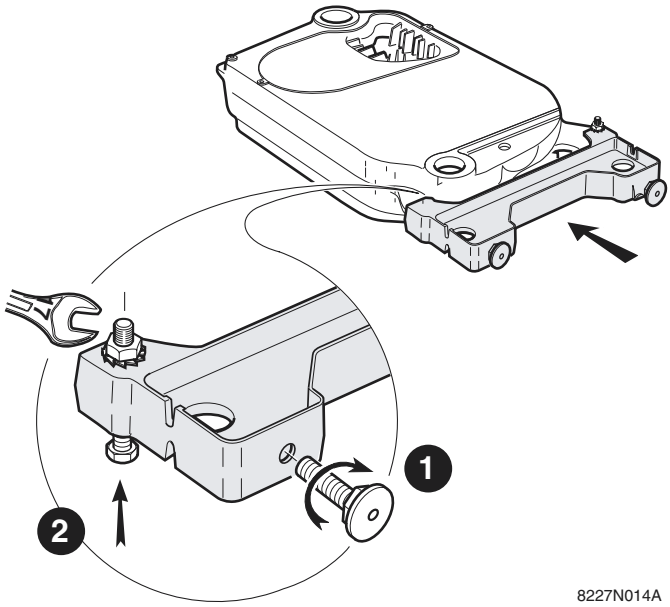
- Philips head screwdriver
- wide flat screwdriver
- 13 and 17 mm wrench
- hammer
- silicone glue
- JDTE Plus ASME assembly tool
- simplified assembly tool

Step 1

Preparing the front and rear sections

Installing the height converter and the adjustable feet on the rear section

- Fix the adjustable feet (supplied in the bag containing the casing fasteners) onto the height converter.
- Place the rear section on the floor and fix the height converter (2 HM 10 x 25 screws, 17 mm wrench).



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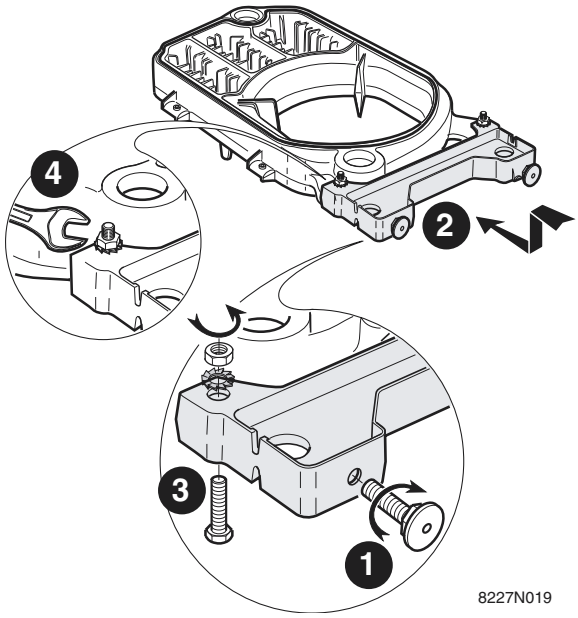
Step 2

- Fix the adjustable feet onto the height converter, place the front section on the floor (with the groove facing up) and fix the height converter.



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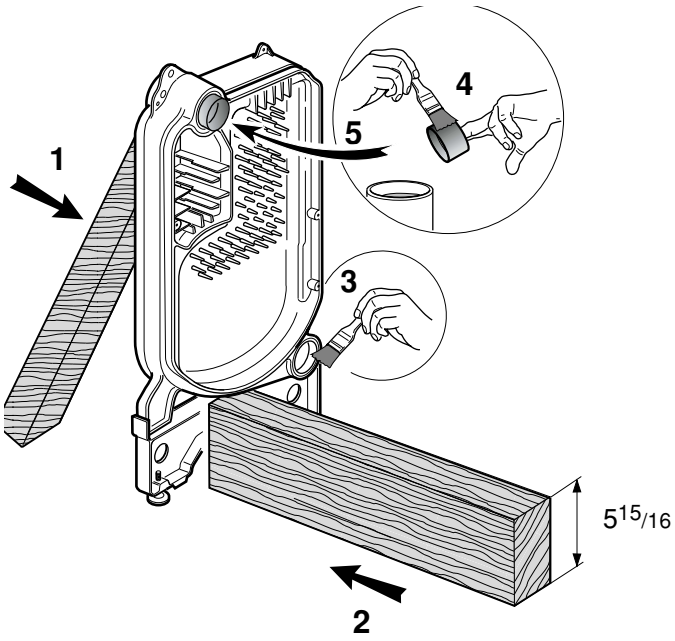
Step 3

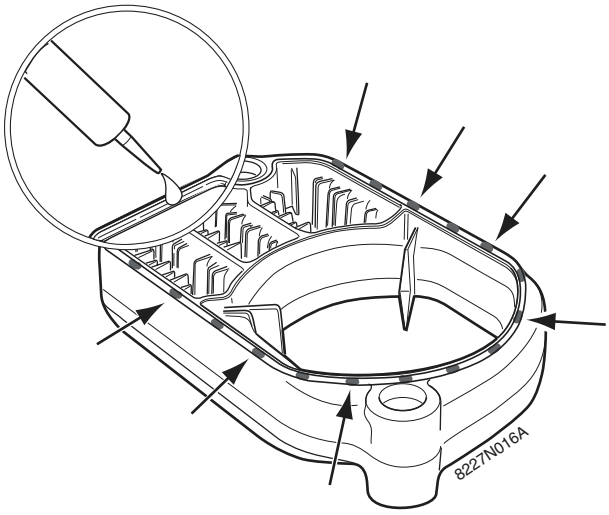
1. Support the section with a wooden block.
2. Place a block with a height of approx. $5^{15/16}$ (depending upon the number of sections, the length varies from $12^{5/8}$ - $32^{1/4}$).
3. Clean the bores and nipples with thinner.
4. Coat them with the coating material supplied.
5. Push in the two nipples moderately.



Step 4

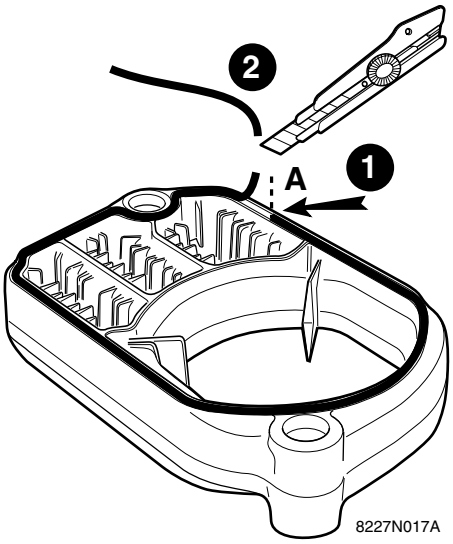
Assembling the sections

- Place the intermediate sections on the floor, groove upwards.
- Prepare the silicone cartridge.
- Put a drop of silicone at about every $7^{7/8}$ of the groove of the intermediate and front sections.



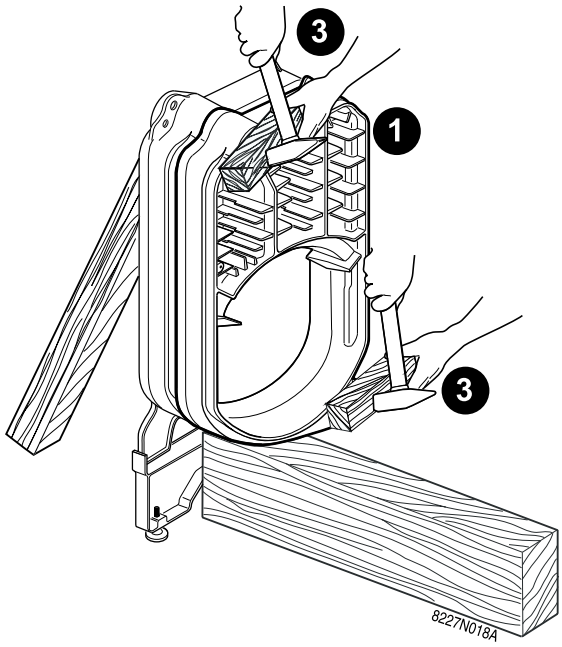
Step 5

- Working from point **A** as shown above, insert the silicone braid into the groove of the intermediate and front sections.
- Cut it to the correct length.



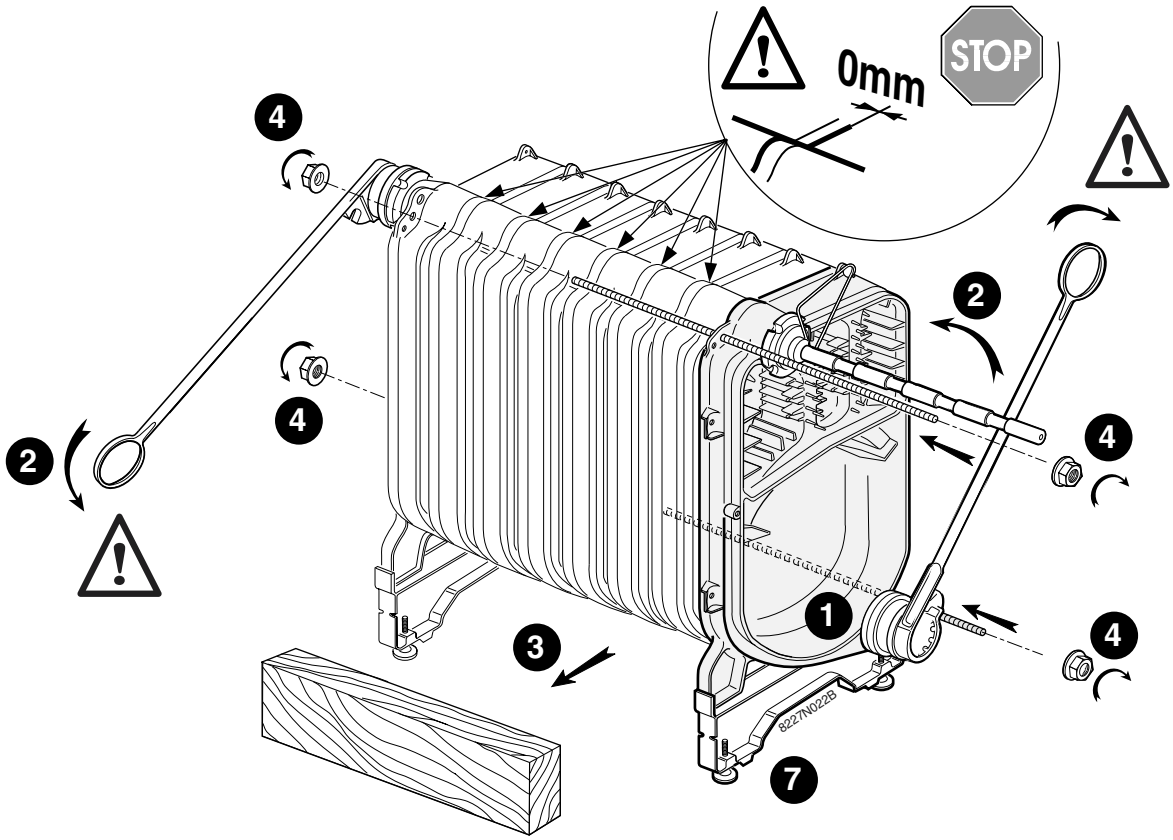
Step 6

- Place the intermediate element on the wooden block.
- Fit the connections of the intermediate element into the nipples on the rear.
- Hammer in with the help of a small wooden block.
- Proceed likewise for the other intermediate sections.



Step 7

- Complete the assembly with the front section.
- Remove the wooden block.
- Put the two threaded rods in place without removing the assembly tool and fasten with the four H8 flanged nuts supplied.
- Clean any extra silicone
- Remove the assembly tool.



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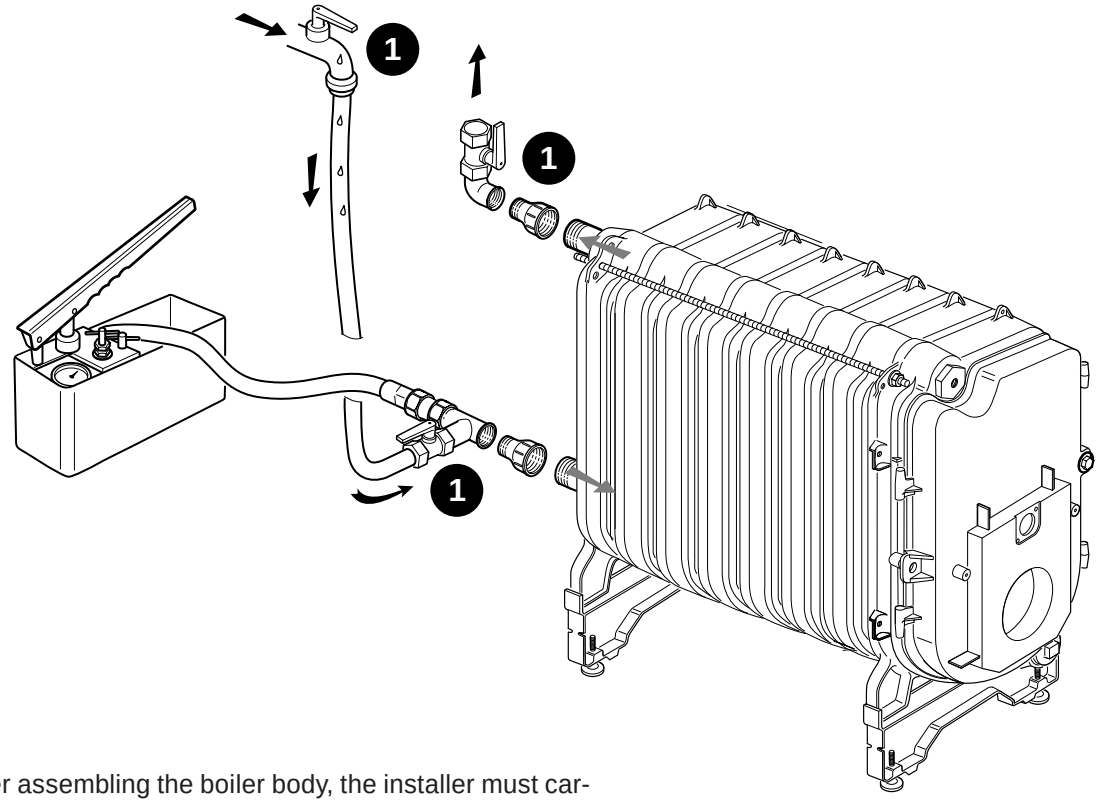
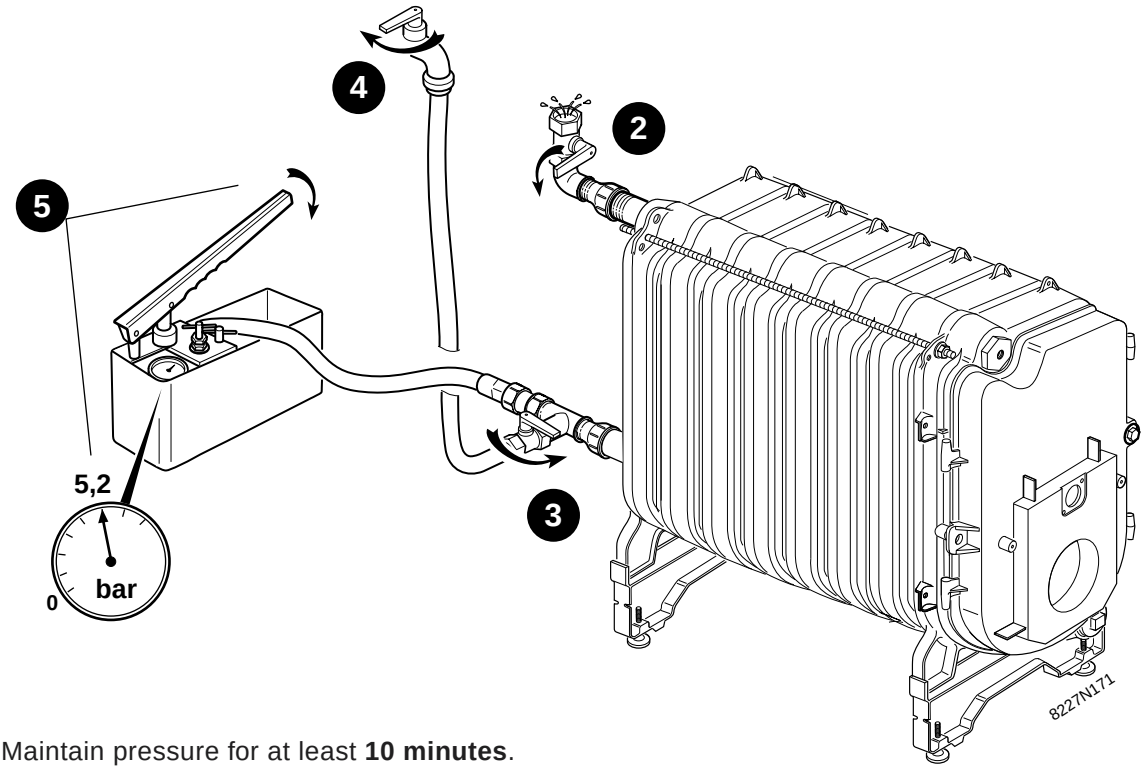
GT 210 A

Hydraulic test [Required for field assembled assemblies]



After assembling the boiler body, the installer must carry out a water tightness test at a pressure equal to 1.5 times the operating pressure (that is **5,2 bar minimum**) for **10 minutes at least**. The test must be done at room temperature.

Ensure that all the air in the boiler is vented to avoid any bursting of the body.



Maintain pressure for at least **10 minutes**.

Any drop in pressure indicates a leakage in the boiler body.

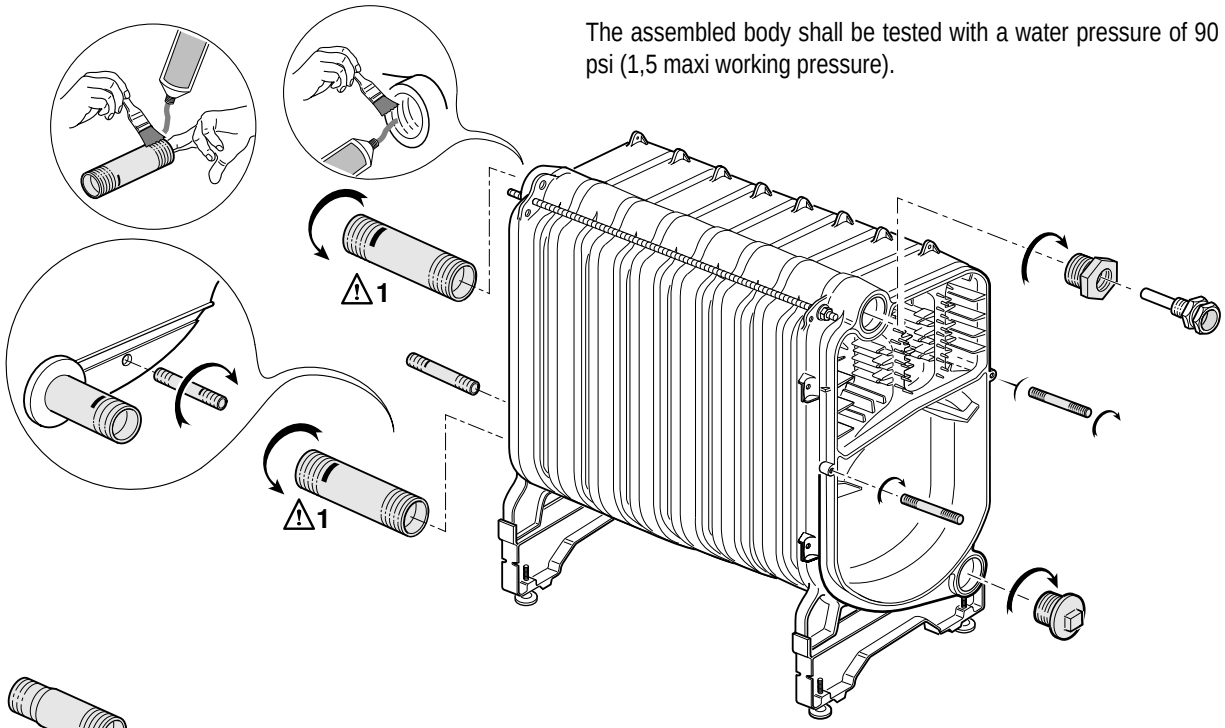
After the tightness test, drain the boiler and remove all the parts used for the test.

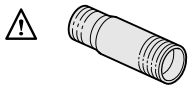
Step 8

Assembling the outlet, return and draining tubes

- Coat the threaded and tapped connections of the sections, tubes, plugs and thimble tubes with pipe dope (not supplied).
- Screw the 2 outlet and return tubes and the draining tube onto the rear section.
- Screw the threaded plug with the thimble tube in the upper connection and the other in the lower connection.
- On the front, install the two M10 pins in the holes designed for that purpose.

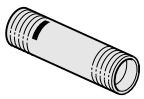
The assembled body shall be tested with a water pressure of 90 psi (1,5 maxi working pressure).





- for **4** and **5** section boilers use **1"1/4 NPT** flow pipe.

Place the smaller threaded side to the outside.



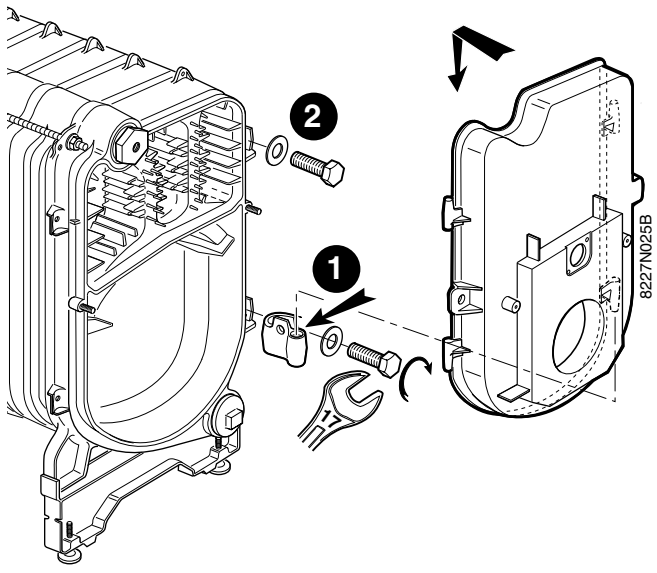
- for **6** to **8** sections boilers use **1"1/2 NPT** flow pipe. Place the threaded side with the yellow marking to the outside.

Step 9

Assembling the door with right-hand opening

1 Put the lower hinge in place, press it against the front section and fix it with an HM 10x50 screw + wide CL 10-20 tapered washer (17 mm wrench).

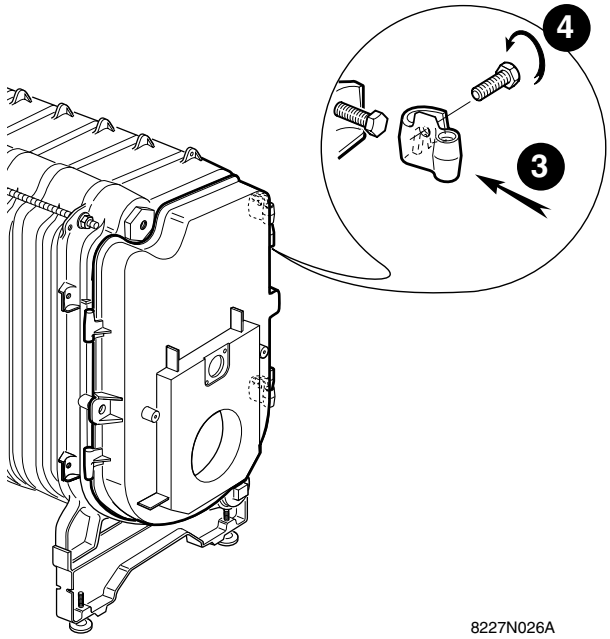
2 Assemble the other HM 10x50 hinge and wide CL 10-20 tapered washer.



Step 10

3 Mount the upper hinge (1 H 10x50 screw).

- Mount the H 10x20 adjusting screw on the upper hinge.



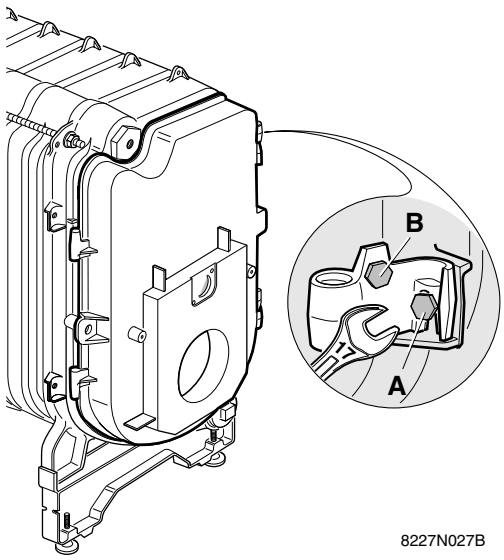
Step 11

Adjust the upper hinge to adjust the door:

• unfasten screw **A**,

• adjust screw **B** so that the door is positioned correctly

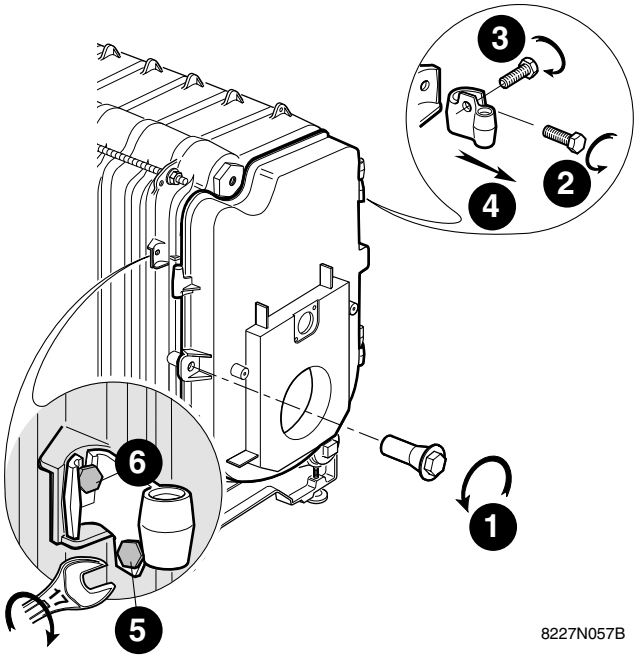
• fasten screw **A**.



Step 12

Assembling the door with left-hand opening

▸Proceed similarly, with the hinges on the left-hand side.

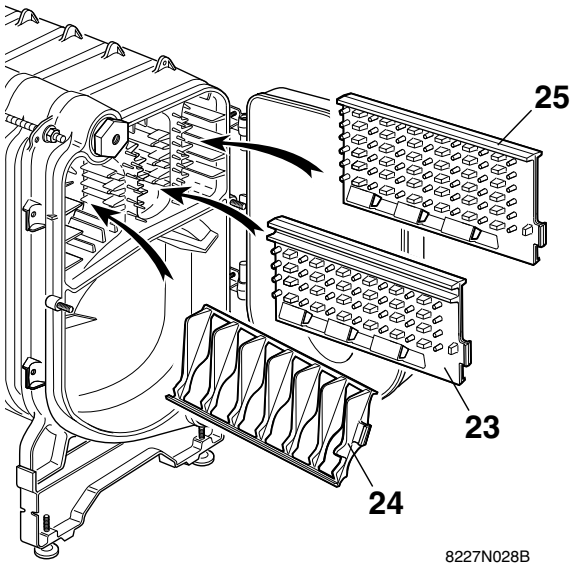


Step 13

Installing the convection accelerators

▸Open the door.

▸Place the convection accelerators in the flues passage.



GT214A: DR64 box

1 x 8227-0017 item 23
1 x 8227-0012 item 24
1 x 8227-0019 item 25

GT215A: DR65 box

1 x 8227-0017 item 23
1 x 8227-0019 item 25

GT216A: DR66 box

1 x 8227-0011 item 23
1 x 8227-0018 item 25

GT217A: DR67 box

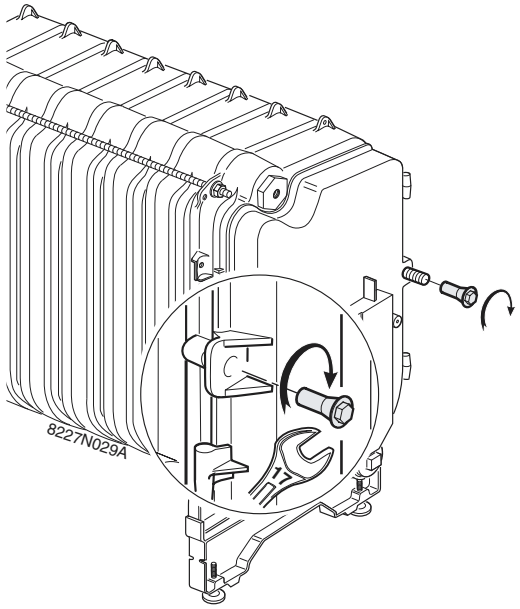
1 x 8227-0011 item 23
1 x 8227-0018 item 25

GT218A: DR68 box

1 x 8227-0017 item 23
1 x 8227-0019item 25

Step 14

▶Close the door with the two special nuts (17 mm wrench).

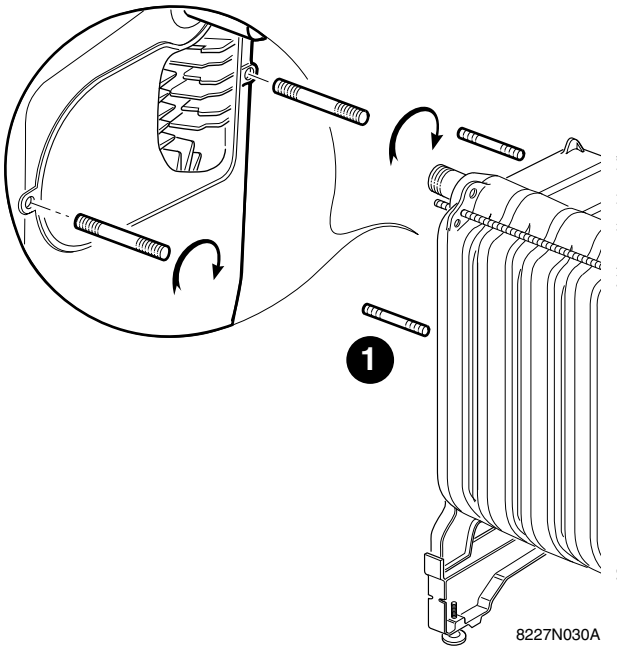


Step 15

Assembling the flue gas nozzle

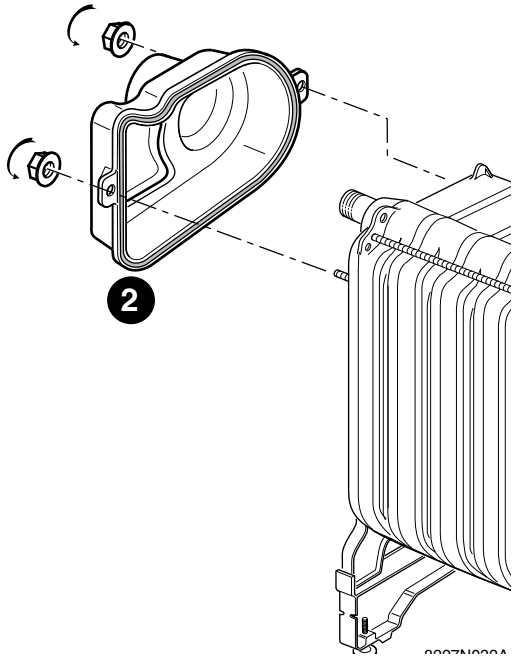
▶Screw 2 M8 pins in the rear section.

The assembled boiler shall be subjected to a hydrostatic test pressure not less than 1 1/2 times the maximum allowable working pressure : 60 x 1.5 = 90 psi (with a maximum of 99 psi) and during more than 10 minutes.



Step 16

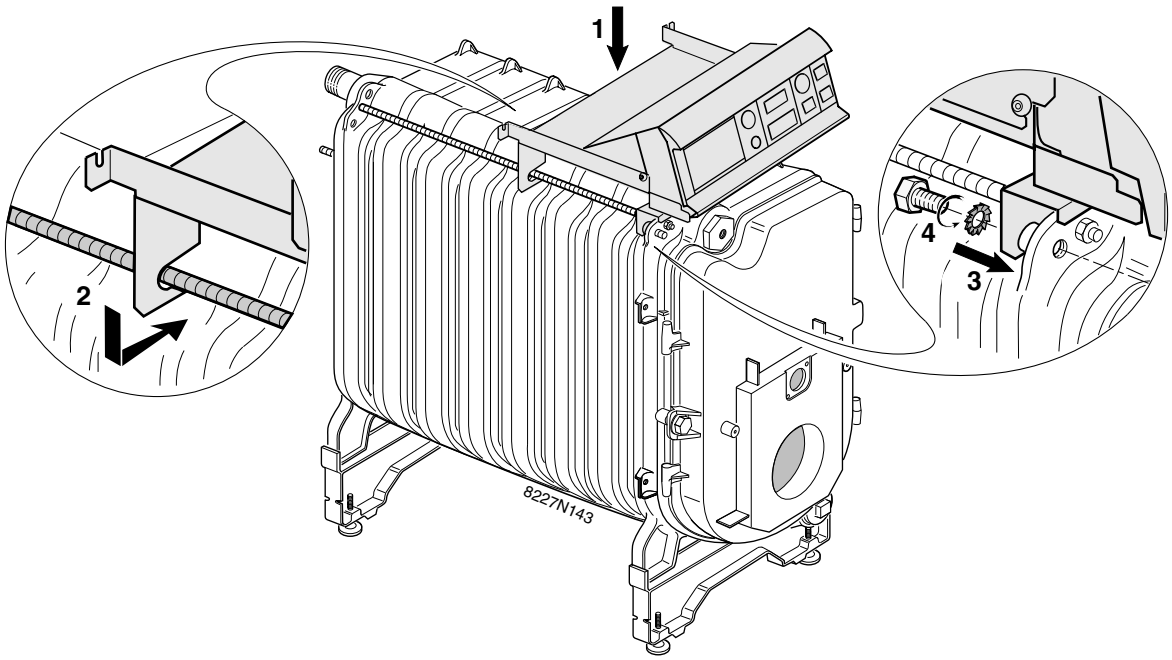
- Assemble the flue gas nozzle onto the pins and fix with two flanged nuts. Do not over tighten.



Step 17

Assembling the control panel

1. Place the control panel on the boiler body.
2. Position it on the body assembly rod.
3. Push it completly to mounting tabs.
4. Secure it to the front with two M8 screws + serrated washers screwed into the cast iron.



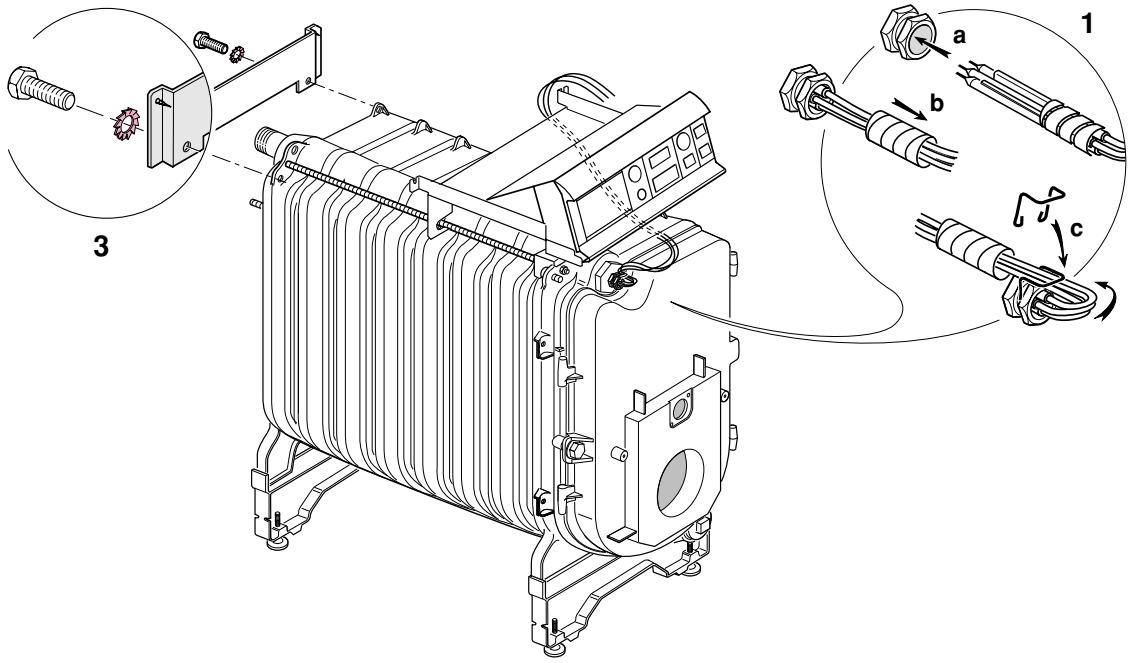
Step 18

Installing the bulbs

1 Put the bulbs in place in the thimble tubes, and pass the wires under the control panel

2 Open the casing package and take out the rear crossbar.

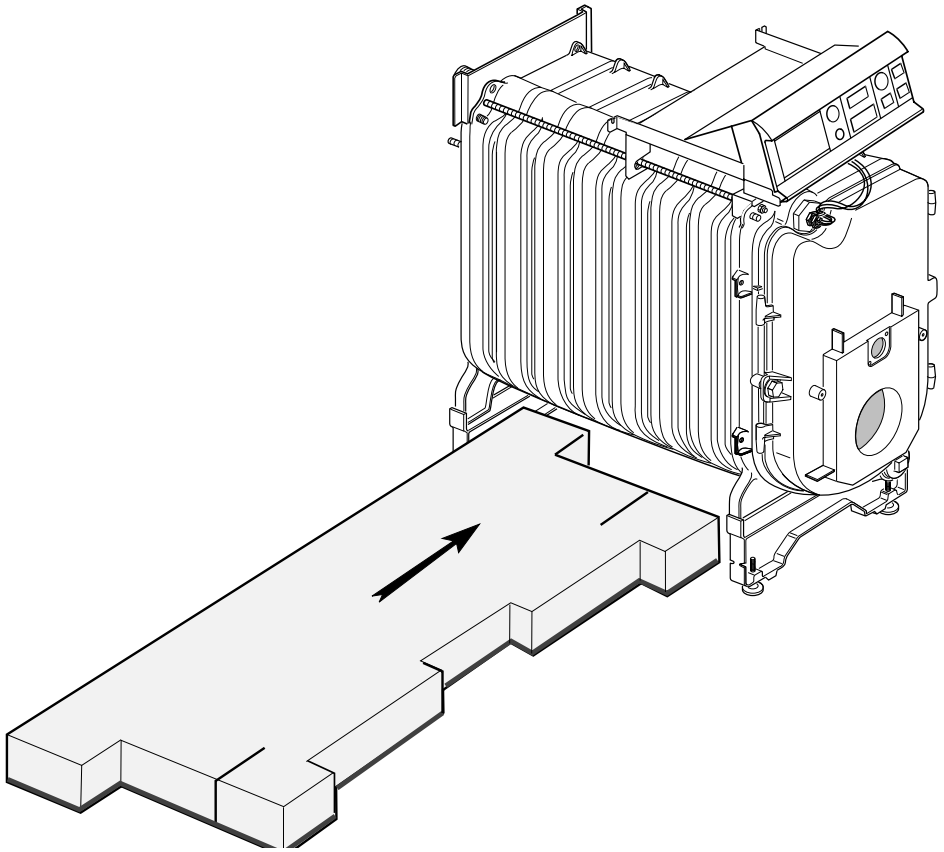
3 Secure the crossbar to the rear section on the outside of the ears with two M8 screw and 2 serrated washers.



Step 19

Positioning the insulating material

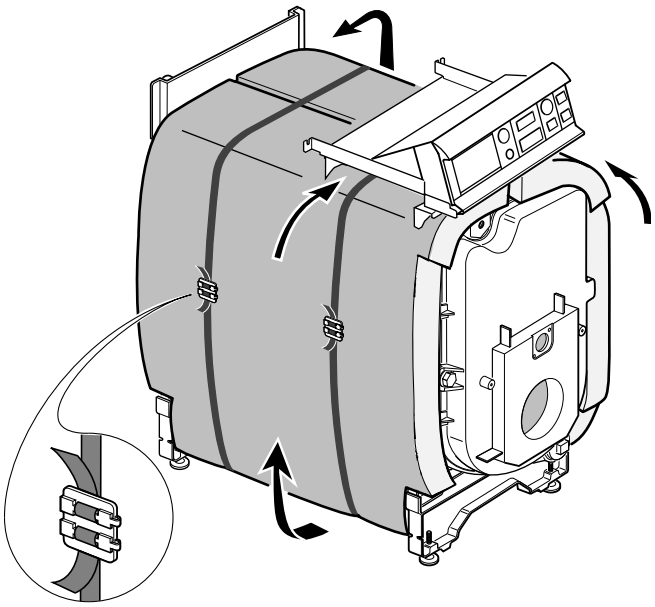
(black fabric facing downwards)



Step 20

Installing the insulating material

- Place the insulating material around the body and fix it with two straps.
- Put one strap on the front, underneath the control panel and the other at the middle of the remaining part.



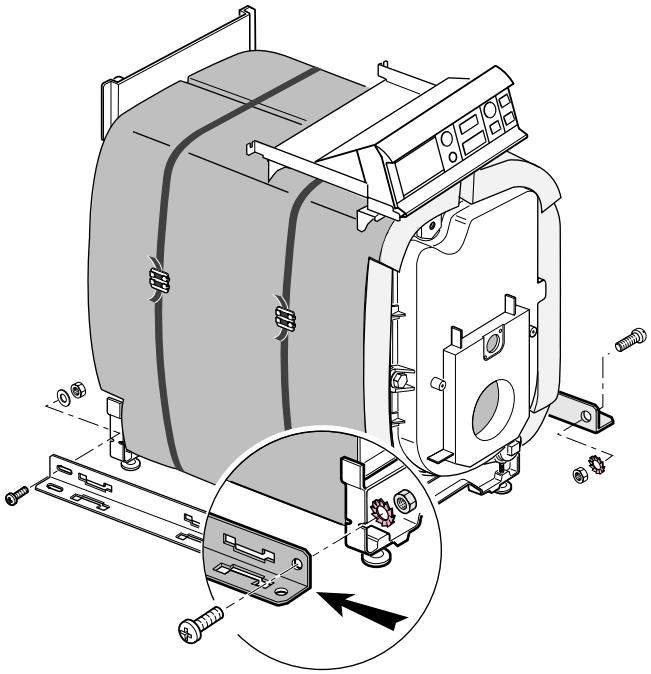
Step 21

- Place the two lower side pieces (with the round hole towards the front and the oblong hole towards the back of the boiler).
- Install :

• to the front with a screw, serrated washer and nut,

• to the rear with a screw, LL washer and nut.

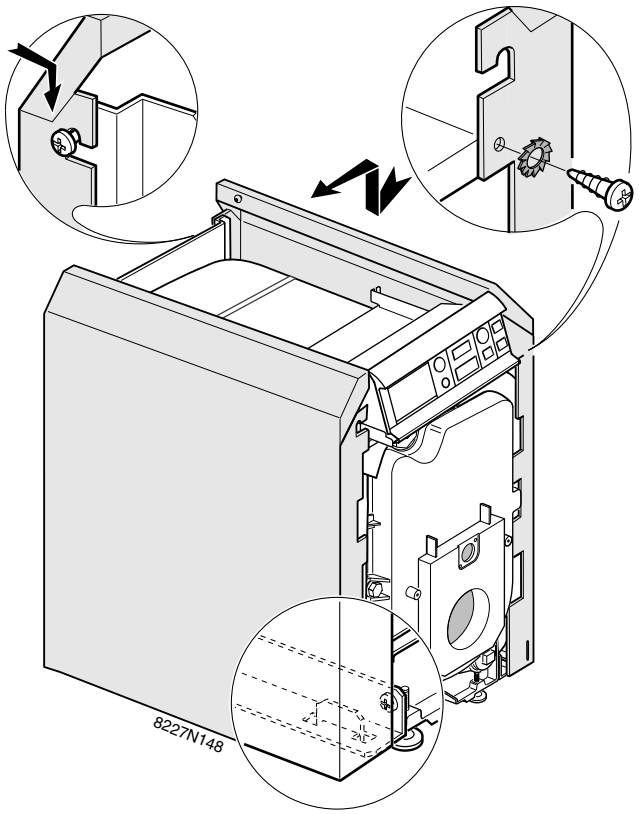
- Screw the screws tightly into the notch of the front height converters.



Step 22

Assembling the side panels

- Insert the side panels from the bottom into the notches on the lower side pieces.
- Put the side panels in contact with the upper rear cross bar.
- Lift the panels up slightly and fit them in.
- Install them to the front of the control panel with two tapping screws and serrated washers.
- Tighten the screws of the rear crossbar.

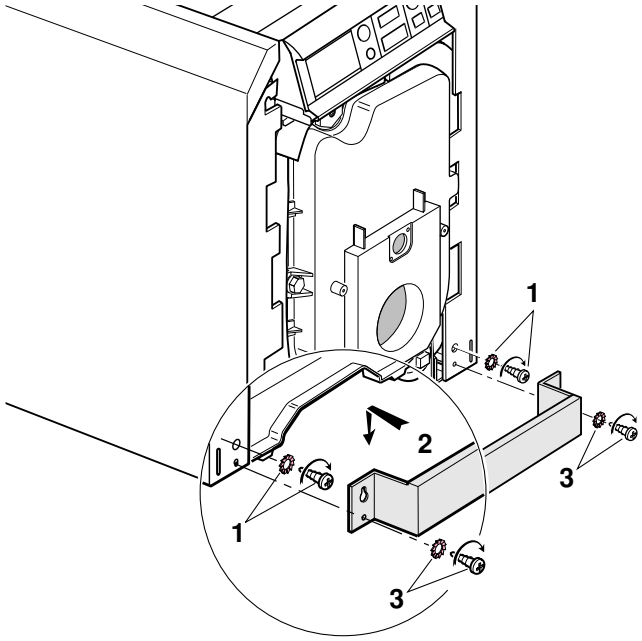


Step 23

Assembling the lower front panel

- To mount the lower front panel, proceed as follows:

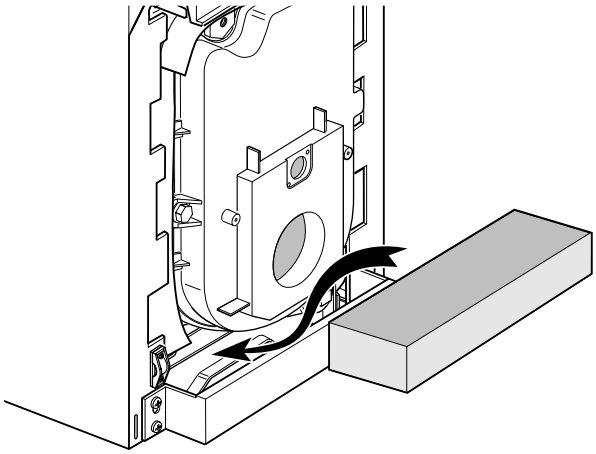
1. Assemble the two tapping screws and serrated washers on the left and right-hand side panels.
2. Slide lower front panel 2 onto the two tapping screws and serrated washers.
3. Install two tapping screws and serrated washers on the lower part and tighten the four screws.



Step 24

Installing the lower front insulating material

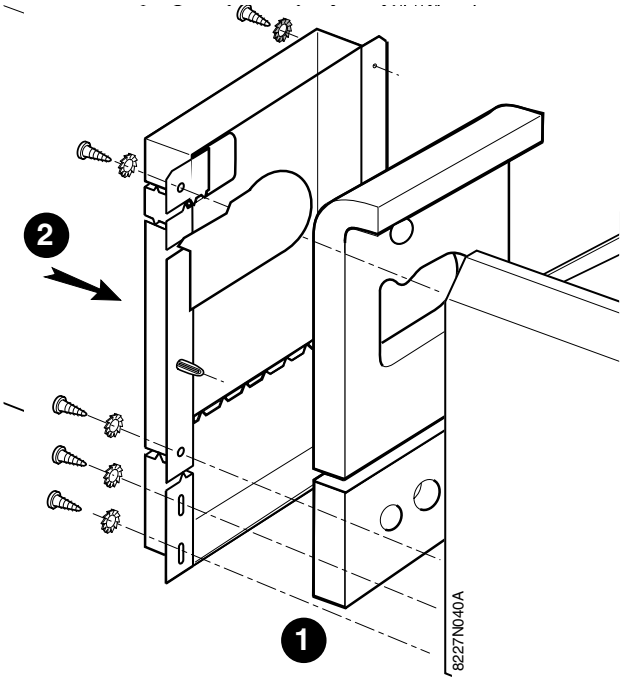
- Install the insulation of the lower front panel with the black fabric facing upwards.



Step 25

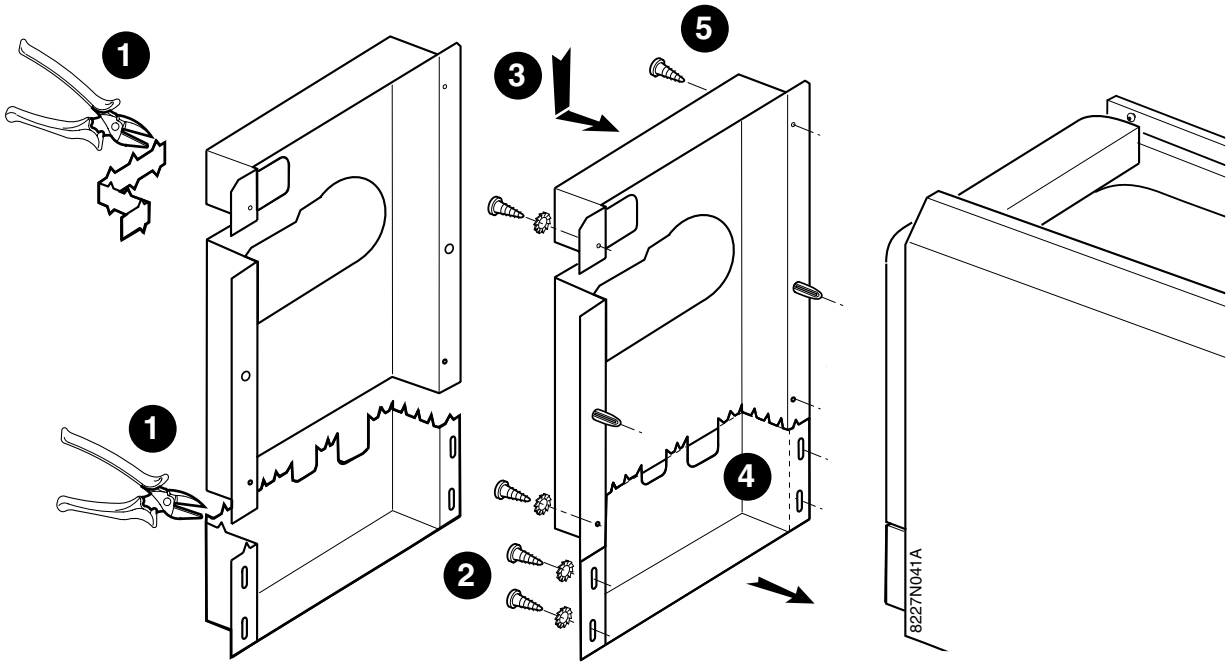
Installing the rear insulating material

1. Mount the lower and upper rear insulating material, with the top folded in towards the boiler at a 90° angle.
2. Mount the rear plate (8 tapping screws and serrated washers).



Step 26

- If the boiler is connected to the installation, cut the panel with cutting pliers along the cut-outs.
- First assemble the lower part with four tapping screws and serrated washers.
- Then clip on the upper part.
- If required, assemble the lower part once again to conceal the cut edges.
- Install the upper part with four tapping screws and serrated washers.



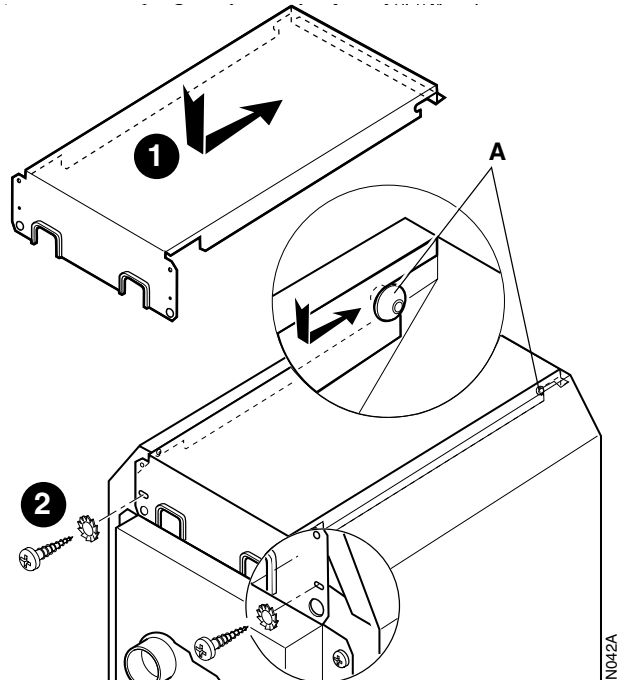
Step 27

Electrical connections:

The electrical connections shall be performed by a qualified professional (see the instructions supplied with the control panel).

Step 28

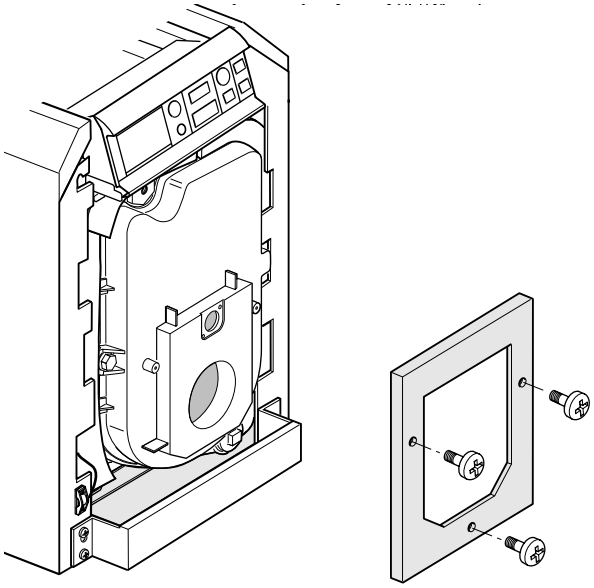
- Assemble the cover, placing it on studs **A** located on the front and rear of the left and right-hand side panels.
- Install with four tapping screws and washers.



Step 29

Assembling the insulated furnace door panel

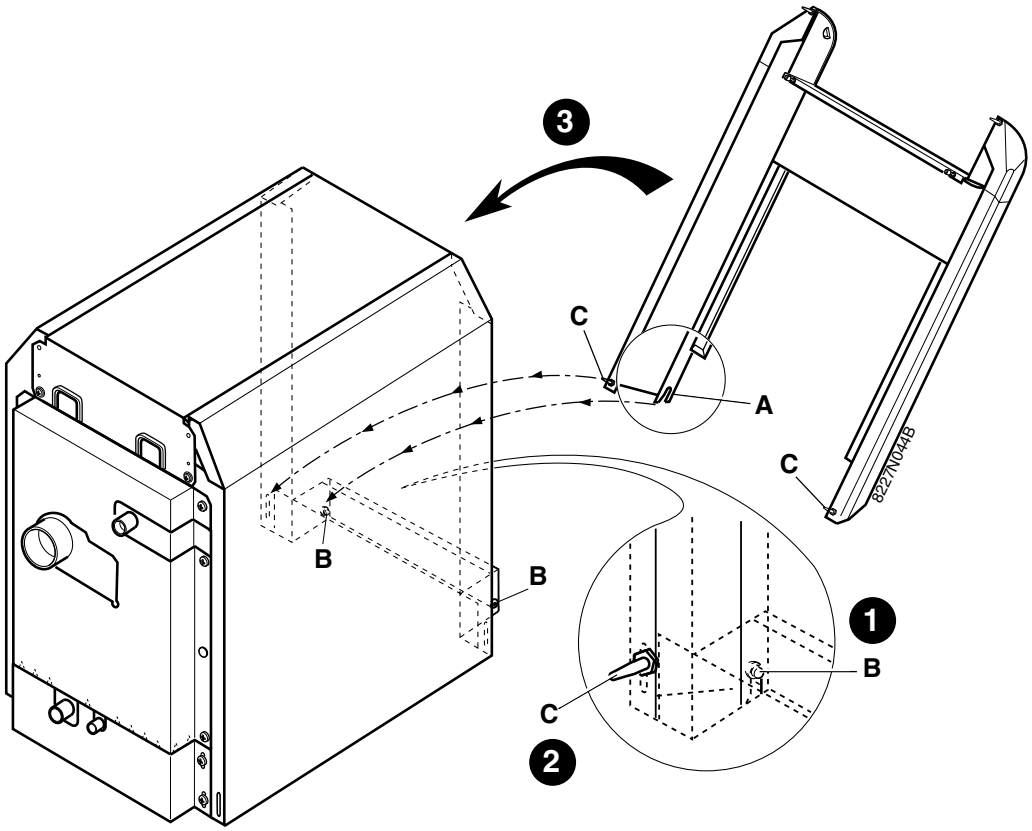
- Install with the three black screws with large heads provided for that purpose.



Step 30

Assembling the front panel

- Put notches **A** on studs **B** of the lower front panel.
- Position point **C** in the centring groove of the side panel.
- Push the panel to fit it in.

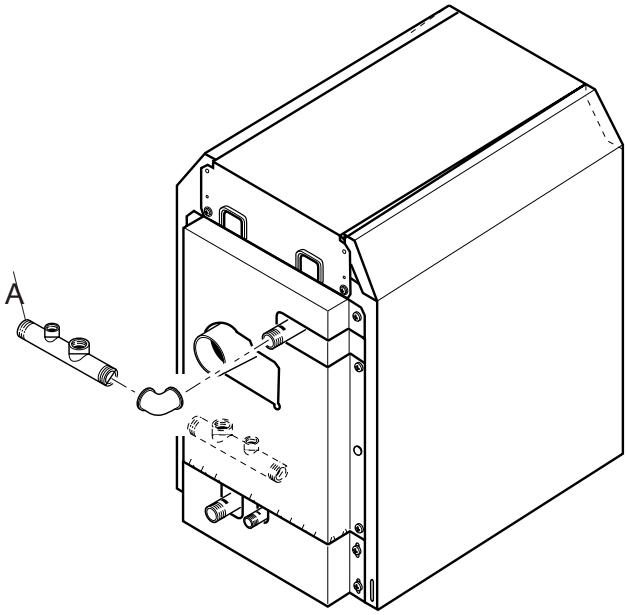


Step 31

Installation of supply manifold, ports for relief valve 3/4" & P/T Gauge 1/4" NPT.

- 4/5 sections 1” 1/4
- 6 to 8 sections 1” 1/2

A: Can be mounted on the left or the right hand side.



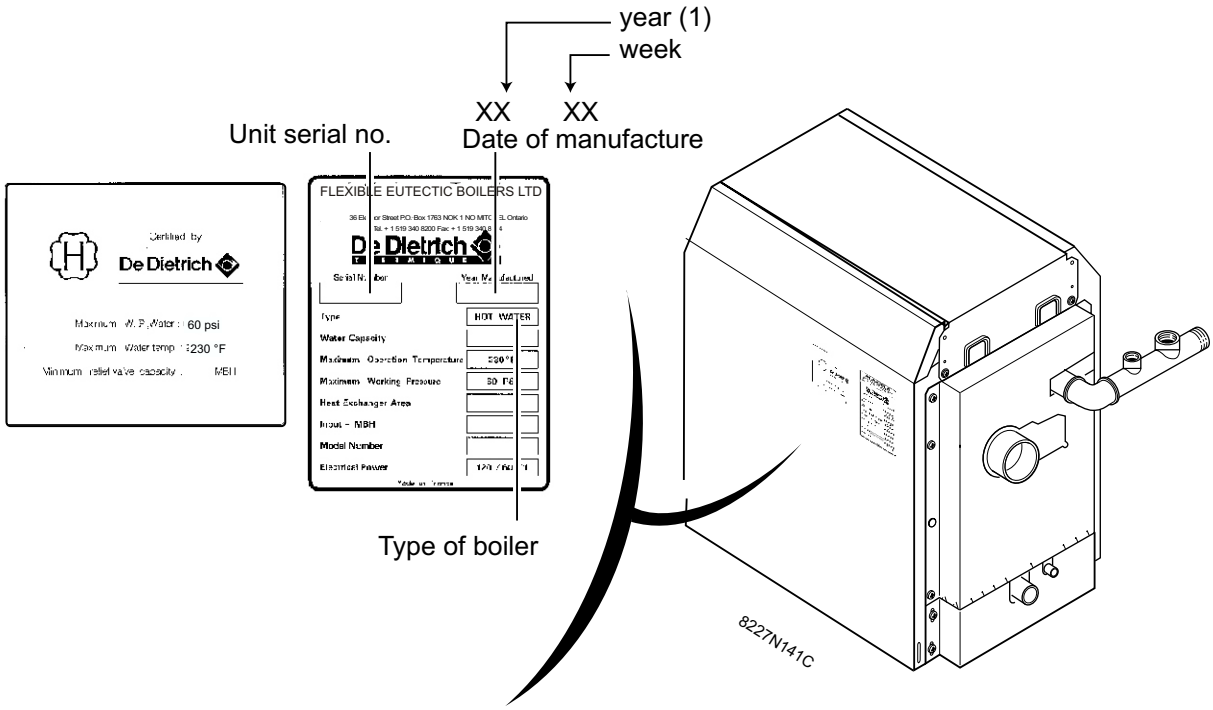
Step 32

Glue the identification plate (supplied in the instructions bag) on the casing (on the left or right-hand side) in an easily accessible location.

(1) 05 = 2005,

06 = 2006,...

...



i The installation is not complete unless the nameplate is attached here.

Chimney connection

1 Venting the boiler

The boiler must be connected to a venting system that will safely and effectively discharge all flue gases to the outside in an effective manner.

Do not Co-Vent a Direct Vent or Sidewall vent system boiler, these venting options are specifically designed for single boiler venting, follow all local and national codes. The sidewall or direct vent termination must be installed in a location which avoid accumulation of snow or debris that could block the vent terminal. Consult local codes regarding other requirements for the location and installation of the vent terminal.

Co-Venting with other appliances, must be sized and installed according to CSA B149 & ANSI Z223.1, Any improper operation of venting system must be corrected and resized according to the tables in part II of national fuel code Z223.1 & CAN CSA B149 installation codes.

2 Connecting the Venting to the Boiler

Consult local and national codes regarding the sizing of the boiler breeching and chimney venting. See venting section of manual regarding typical venting systems and requirements.

Connecting the burner

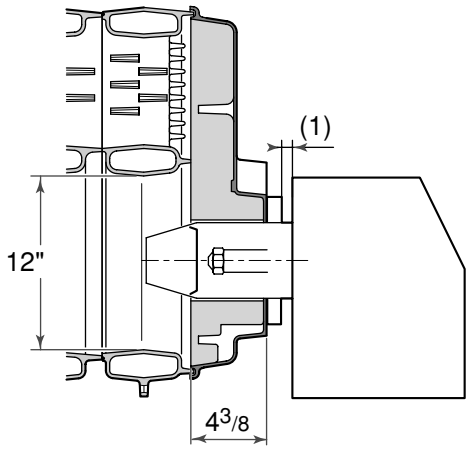
Important: the position of the head of the burner in relation to the door insulating material must be as shown opposite, particularly if the burner is not a De Dietrich burner.

Note:

Refer to the instructions supplied with the burner for information relating to the connections, adjustment, commissioning and maintenance of the burner.

(**1**) See burner instructions as supplied

The fuel tank and supply lines to the burner must be installed according all applicable National and local codes

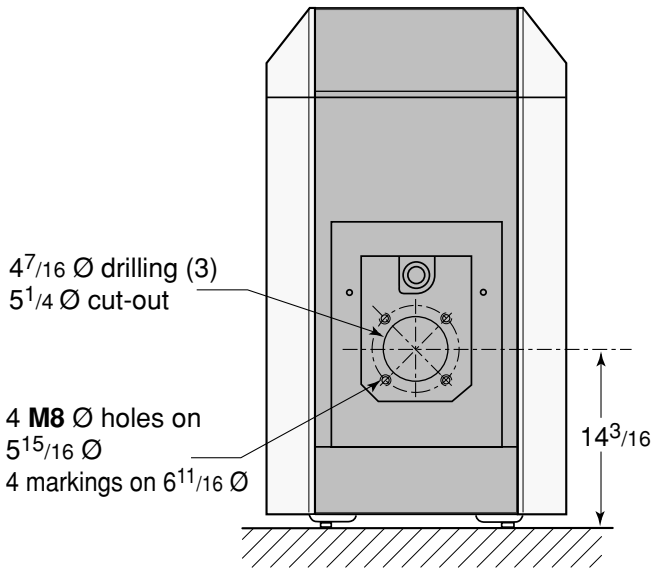


Consult the documentation of the boiler control and the burner documentation as supplied regarding setup, wiring and startup.

Do not attempt to start the burner, until all service and clean-out doors are closed and venting is properly connected to the boiler.

Consult the burner documentation regarding the required maintenance required for the burner, filters and nozzle.

The entire system should be cleaned and check at least once each heating season.



3. Boiler Venting & Chimney General

Caution & Warning:

It is advised and recommended that the heating contractor-professional apply vent materials that are approved and agency listed. Installation of any venting must follow all local codes in conjunction with vent manufacturer instructions and appliance manufacturer instructions.

All De Dietrich GT series oil-gas fired cast iron boilers are high performance boilers that could operate under all 4 vent categories as established by ANSI Z21.13/CSA 4.9 Standard. To assist with application where the vent category is unknown a graph below has been provided to assist you in determining the vent category and what venting materials would be acceptable. Although the gas vent categories were developed specifically for gas fired appliances, using this information is helpful for oil fired boilers. It is very important the venting be selected according to the conditions that the boiler will operate under, minimum and maximum firing conditions of the boiler must be respected. The venting installed must comply and be certified to all applicable codes and standards for each jurisdiction.

Gas-Vent Category [4] Definitions:

Cat. I
A Boiler, which operates with a non-positive vent (breech) pressure and flue gas temperatures which avoids excessive condensation production in the chamber and venting.

Cat. II
A Boiler, which operates with a non-positive vent (breech) pressure and flue gas temperatures produce condensation production in the chamber and venting.

Cat. III
A Boiler, which operates with a positive vent (breech) pressure and flue gas temperatures which avoids excessive condensation production in the chamber and venting.

Cat. IV
A Boiler, which operates with a positive vent (breech) pressure and flue gas temperatures produces condensation production in the chamber and venting.

Chart A

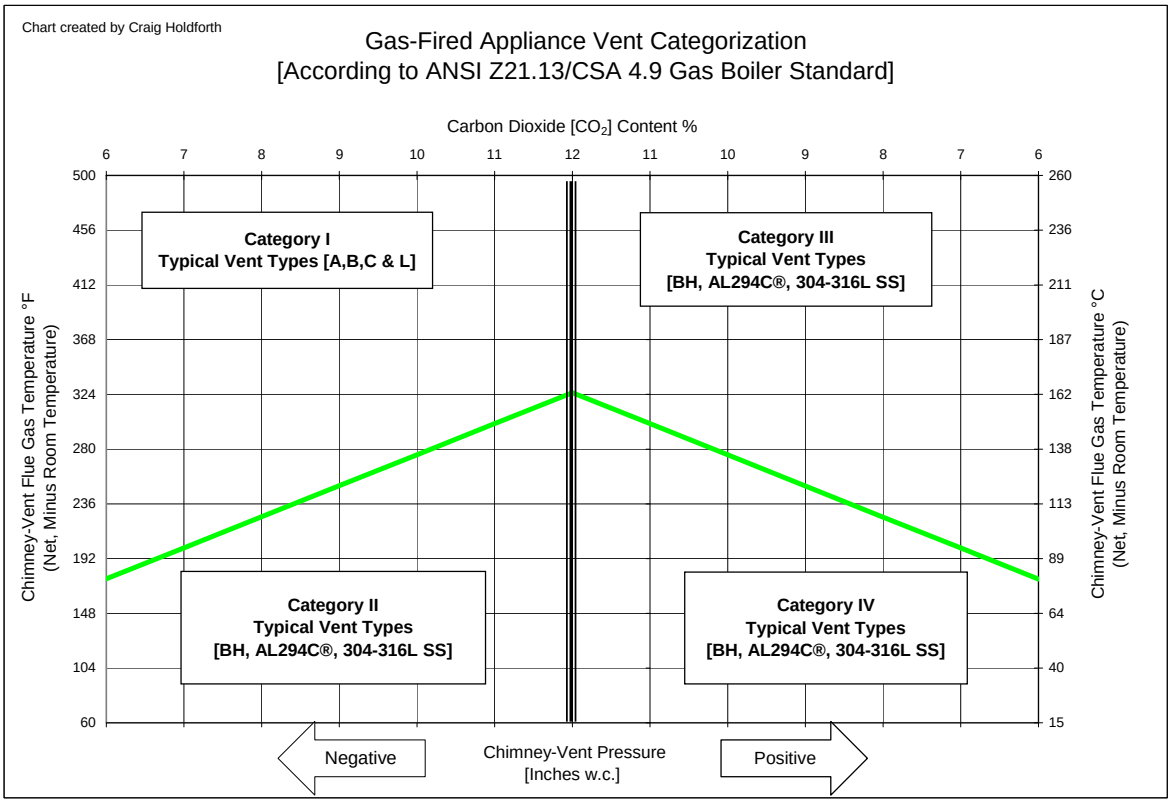


Chart created by Craig Holdforth
Gas-Fired Appliance Vent Categorization
[According to ANSI Z21.13/CSA 4.9 Gas Boiler Standard]
Carbon Dioxide [CO2] Content %
6 7 8 9 10 11 12 11 10 9 8 7 6
Chimney-Vent Flue Gas Temperature °F
(Net, Minus Room Temperature)
500 456 412 368 324 280 236 192 148 104 60
Chimney-Vent Flue Gas Temperature °C
(Net, Minus Room Temperature)
260 236 211 187 162 138 113 89 64 40 15
Category I
Typical Vent Types [A,B,C & L]
Category III
Typical Vent Types
[BH, AL294C®, 304-316L SS]
Category II
Typical Vent Types
[BH, AL294C®, 304-316L SS]
Category IV
Typical Vent Types
[BH, AL294C®, 304-316L SS]
Negative
Chimney-Vent Pressure
[Inches w.c.]
Positive

3.1 Boiler Venting – Category I & II Typical Layouts and Requirements.

Caution & Warning:
Improperly sealed venting system could result in carbon monoxide [CO] poisoning; ensure adequate support and fastening of the system. Ensure venting can safely exhaust all flue gases outside in an effective manner. These systems must operate under a negative vent pressure condition that is stable.

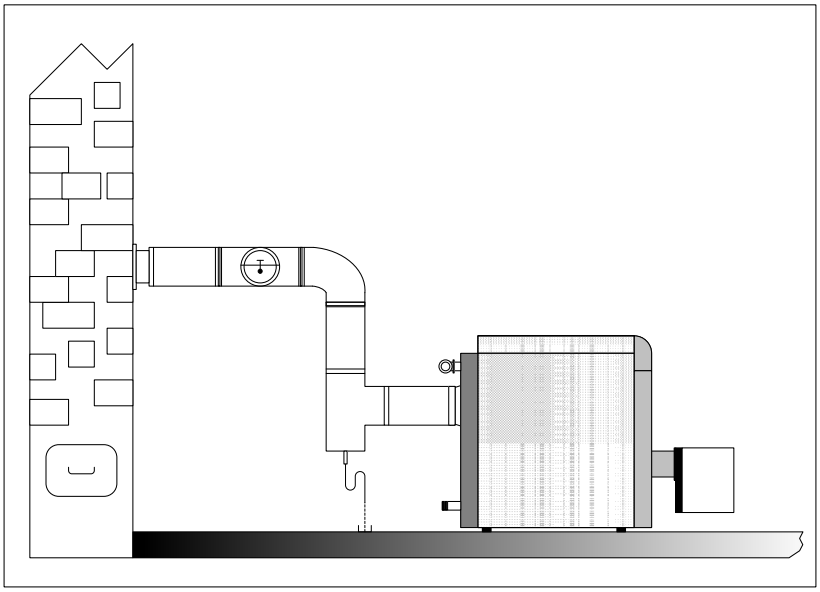
Warning & Cautions for Co-Venting:
Co-venting with other appliances shall conform latest ANSI Z223.1 & CAN/CGA 149 installation codes, any improper operation shall be corrected, the common venting shall be sized according to the appropriate tables in Part II of the above mentioned codes.

Category I Vent Systems Requirements:

1. Flue gas temperatures above the green line shown in chart A.
2. Approved type of venting for category I appliances.
3. A barometric draft control maybe employed as required, but is not necessary for correct boiler operation. Consult a chimney-vent specialist for correct application and usage.
4. Breeching and chimney vent sized in accordance to local and national codes or by good engineering methods.
5. Vent safety device equipped on the venting or as equipped on burner.
6. Condensate TEE fitting supplied on the boiler breeching as close as possible and be orientated to avoid accumulation of flue gas condensation in the boiler or venting is also used to determine flue gas emissions.

Category II Vent Systems Requirements:

1. Flue gas temperatures below the green line shown in chart A.
2. Approved type of venting for category II appliances.
3. A barometric draft control maybe employed as required, but is not necessary for correct boiler operation. Consult a chimney-vent specialist for correct application and usage.
4. Breeching and chimney vent sized in accordance to local and national codes or by good engineering methods.
5. Vent safety device equipped on the venting or as equipped on burner.
6. Condensate TEE fitting supplied on the boiler breeching as close as possible and be orientated to avoid accumulation of flue gas condensation in the boiler or venting is also used to determine flue gas emissions.



Caution-Warning:

Flue gas condensation is very aggressive and corrosive which could lead to failure of the venting system or drains, consult local and national codes regarding flue gas condensation disposal. The P-trap assembly must be properly filled with water to avoid escape of flue gas emissions. The flue gas condensation may require neutralization prior to entering the drain.

3.2 Boiler Venting – Category III & IV Vent Systems Typical Layouts and Requirements.

Caution & Warning:
Improperly sealed venting system could result in carbon monoxide [CO] poisoning; ensure adequate support and fastening of the system. Ensure venting can safely exhaust all flue gases outside in an effective manner. These systems must operate under a positive vent pressure condition that is stable.

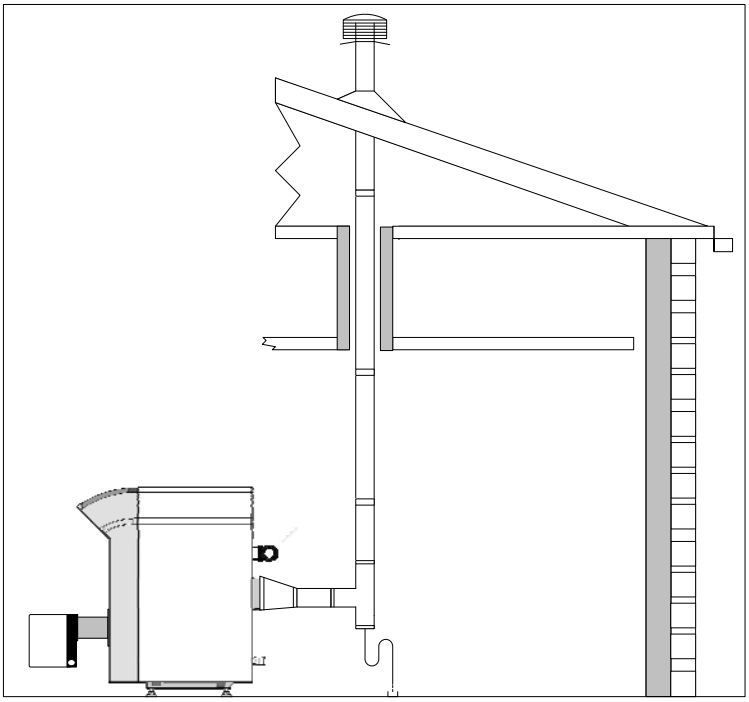
Warning & Cautions for Co-Venting:
Co-venting with other appliances shall conform latest ANSI Z223.1 & CAN/CGA 149 installation codes, any improper operation shall be corrected, the common venting shall be sized according to the appropriate tables in Part II of the above mentioned codes.

Category III Vent Systems Requirements:

1. Flue gas temperatures above the green line shown in chart A.
2. Approved type of venting for category III appliances
3. Breeching and chimney diameter sized in accordance to national & local codes or by good engineering methods.
4. Vent safety device equipped on burner [MR]
5. Condensate TEE fitting supplied on the boiler breeching as close as possible and be orientated to avoid accumulation of flue gas condensation in the boiler or venting.

Category IV Vent Systems Requirements:

1. Flue gas temperatures below the green line shown in chart A.
2. Approved type of venting for category IV appliances
3. Breeching and chimney diameter sized in accordance to national & local codes or by good engineering methods.
4. Vent safety device equipped on burner [MR]
5. Condensate TEE fitting supplied on the boiler breeching as close as possible and be orientated to avoid accumulation of flue gas condensation in the boiler or venting.



Caution-Warning:

Flue gas condensation is very aggressive and corrosive which could lead to failure of the venting system or drains, consult local and national codes regarding flue gas condensation disposal. The P-trap assembly must be properly filled with water to avoid escape of flue gas emissions. The flue gas condensation may require neutralization prior to entering the drain.

3.3 Boiler Venting – Side-Wall or Direct Vent Systems Typical Layouts and Requirements.

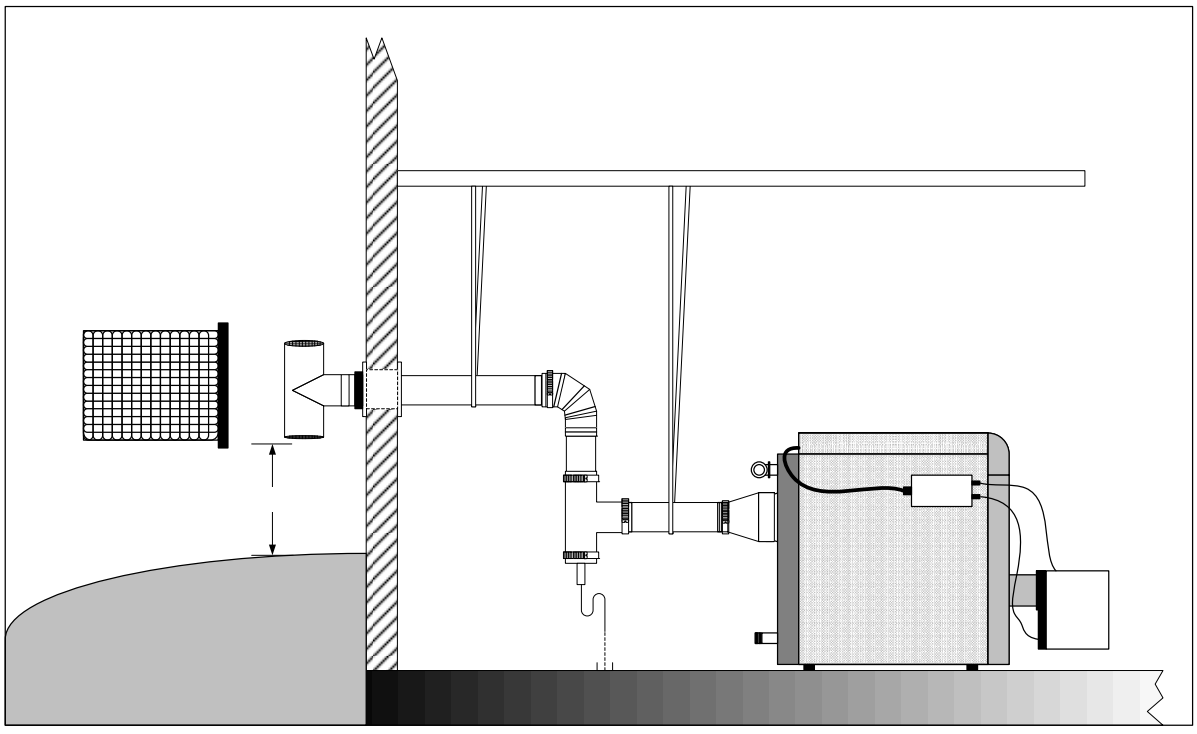
Caution & Warning:
Improperly sealed venting system could result in carbon monoxide [CO] poisoning; ensure adequate support and fastening of the system. Ensure venting can safely exhaust all flue gases outside in an effective manner. These systems must operate under a positive vent pressure condition that is stable. Do not Co-Vent with any other appliance, the venting system was designed for single appliance venting only.

Side-wall & Direct Vent Systems:

These systems do not fall under any of the gas vent categories, these systems are pre-engineered. These applications of this venting system must be followed exactly, for safe, efficient and trouble free operation.

System Requirements:

1. Venting sized accordance to direct vent table
2. Type “BH” [AL294C®] vent material
3. Condensate TEE fitting supplied on the boiler breeching as close as possible and be orientated to avoid accumulation of flue gas condensation in the boiler or venting is also used for determining flue gas emissions.
4. Vent termination TEE
5. Vent safety device equipped on burner [MR]



Vent Termination Locations & Warning – See Section 5.5

Caution-Warning:

Flue gas condensation is very aggressive and corrosive which could lead to failure of the venting system or drains, consult local and national codes regarding flue gas condensation disposal. The P-trap assembly must be properly filled with water to avoid escape of flue gas emissions. The flue gas condensation may require neutralization prior to entering the drain.

5.4 Boiler Venting – Side-wall or Direct Vent Systems Sizing Tables & Vent Safety Device

- All venting lengths must be calculated to equivalent lengths, all application must include at least one 90° elbow
- Venting must be a type 'BH" [AL294C® material]
- Maximum vent length [equivalent] = 30 ft. [9m]
- Minimum vent length [equivalent] 5 ft. [1.5m]
- Maximum number of 90° elbows = 2 or 3 45° elbows, each 90° elbow is equivalent to 10 ft. or straight pipe, the 45° elbow is equivalent = 5 ft.
- Condensate TEE must be provided [equivalent length = 7 ft.]
- Appliance reducing adapter [equivalent length 3 ft.]
- Sealed combustion, combustion air intake sizing, must be sized according to the burner manufacturers instructions
- Vent [breeching] pressure shall not exceed 0.20 inches w.c. [0.50 mbar]
- Vent termination must be a TEE type, follow warning regarding termination locations. Do not include the termination TEE length in the vent length calculation.
- Venting shall be sloped, so any condensation developed will drain through the condensate TEE fitting
- Vent safety device, differential air pressure switch [manual reset] NC switch opens on rise of pressure.
- Optional function of power burners which can employ an post purge function to exhaust flue gases for a fixed time [1 minute to 4 minutes maximum]
- Burner employing a standby air damper closed position, the closed position should be slightly opened to allow hot flue gases to escape upward through venting and not be entrapped in the combustion head. Important note, that in negative building pressures, the observation and odor of flue gases may enter the boiler room.

Determining vent length [equivalent] Example:

Appliance reducing adapter	[x1] = 3 ft.
Condensate TEE	[x1] = 7 ft.
12" vent straight vent pipe	[x3] = 3 ft.
Elbow 90°	[x1] = 10 ft.
Termination TEE	[x1] = 0 ft.
Length [equivalent] =	23 ft.

GT 210 A Series

Model	Boiler Connection ø	Oil-Gas Vent ø	[Δp] Pressure switch Setting [inches w.c.]
GT 214 A	6 inch	4 inch	Set Switch @ 150% above gas burner gas manifold or oil burner head pressure
GT 215 A	6 inch	4 inch	
GT 216 A	7 inch	5 inch	
GT 217 A	7 inch	5 inch	
GT 218 A	7 inch	5 inch	

3.5 All Side-wall and direct Vent termination locations installation precautions:

Warning/Caution:

In all cases avoid potential vent termination locations where excess debris or snow could accumulate and bock the vent termination to any degree.

Minimum clearance of 4 ft. [1.22m] horizontally from, and in no case above or below, unless a 4 foot [1.22m] horizontal distance is maintained, from electric meters, gas meters, regulators & relief equipment.

Do Not Co-Vent Any Direct Vent or Sidewall Venting System

B149.1
(GAS INSTALLATIONS CANADA)

A VENT SHALL NOT TERMINATE…..

Directly above a paved sidewalk or driveway which serves 2 buildings.
Less than 7 ft. any paved sidewalk or drive way
Less than 6 ft. of a combustion air inlet to any building
Less than 4 ft. above a meter/regulator assembly [horizontally] of the vertical center-line of the regulator vent outlet to a maximum vertical distance of 15 ft.
Less than 4 ft. of any gas service regulator vent outlet
Less than 1 ft. above grade or normal anticipated snow level for the area
Less than 3 ft. from windows, doors [that can be opened], combustion air supply or any appliance or building.
Underneath a veranda, porch or deck unless:

1. The veranda, porch or deck is fully open on a minimum of 2 sides beneath the floor
&
2. The distance between the top of the vent termination and the underside of the veranda, porch or deck is greater than 1 ft.

B139-00
(OIL INSTALLATIONS CANADA)

A VENT SHALL NOT TERMINATE…..

Directly above a paved sidewalk or driveway which serves 2 buildings.
Less than 7 ft. any paved sidewalk or drive way
Less than 6 ft. from an open-able window, door or mechanical combustion air supply
Less than 6 ft. of any combustion air inlet
Less than 3 ft. of the vertical centerline of the meter/regulator assembly on a horizontal plane perpendicular to the regulator
Less than 6 ft. of gas service regulator vent outlet
Less than 4 ft. of oil tank vent or oil tank fill inlet
Less than 1 ft. above grade or normal anticipated snow level for the area.
Within 6 ft. of a property line
Underneath a veranda, porch or deck
Flue gases are within 6 ft. of combustible material or any openings of surrounding buildings.
Less than 3 ft. from an inside corner or L-shaped structure
Where flue gases may be directed towards brickwork, siding or other construction that may cause damaged from heat or condensate from the flue gases.

NFPA 54 / ANSI Z223
(GAS INSTALLATIONS USA)

A VENT SHALL NOT TERMINATE…..

Less than 3 ft. of any combustion air inlet source located within 10 ft.
Less than 1 ft. from any obstructions
Less than 1 ft. above grade or normal anticipated snow level for the area.
Over public walkways, driveways or other areas where condensate or vapor could create nuisance or hazard or could be detrimental to the operation of regulators, relief's, valves or other equipment

NFPA 31
(OIL INSTALLATIONS USA)

A VENT SHALL NOT TERMINATE…..

Less than 5 ft. from vent outlet of the supply tank
Less than 7 ft. above walkways
Less than 1 ft. from any door, window or air inlet source
Less than 1 ft. from grade or snow level.
Less than 3 ft. from a air intake that is within 10 ft
Less than 1 ft. from soffit of the roof
Less than 3 ft. from any building corner or L shape structure

WARNING-CAUTION
Consult Local Codes & Authorities for other Requirements not mentioned

Electrical connections

See the specific instructions supplied with the control panel of the boiler.

Warning
Label all wires prior to disconnecting when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

Maintenance

1 Boiler

Draining

We advise you against draining the installation, unless it is absolutely necessary. Check the water level in the installation regularly and top up if required, making sure you do not suddenly add cold water into a hot boiler.

Cleaning

Please note that an efficient boiler is a boiler with clean exchange surfaces.

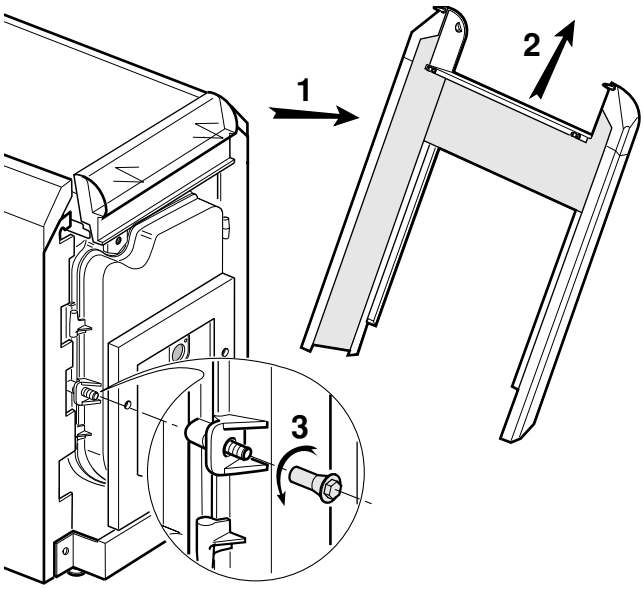
The boiler should be cleaned as and when required, **at least once a year**, depending upon applicable regulations and specific needs.

The operation should not be required more than a few times each season and should not involve large quantities of water. Otherwise, look for the leak and repair it immediately.

The operations described below shall only be performed with the boiler and power supply off.

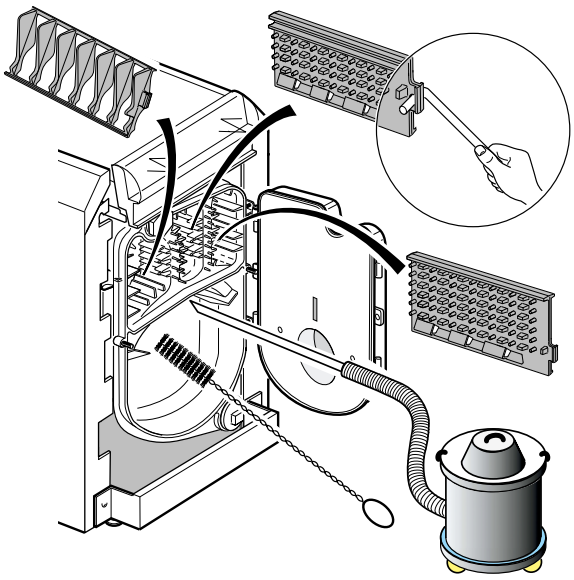
To have access to the exchange surfaces:

- take off the front of the casing,
- open the door by unscrewing the two flanged nuts (17 mm wrench).



- remove the convection accelerators in the flues of the boiler with the supplied removal hook
- carefully sweep the flues with the brush supplied for that purpose
- brush out the furnace as well
- vacuum the soot from beneath the flues and in the furnace with a sweeping brush or a vacuum cleaner with a tube diameter less than 11/2
- put back the convection accelerators
- close the door and put back the front panel.

Refer to the instructions supplied with the burner for burner maintenance.



2 Domestic hot water (GT 2100)

See the instructions supplied with the MLS 150 or 250 tank.

3 Precautions required in the case of long boiler stops (one or more years)

The boiler and the chimney must be swept carefully. Close the door of the boiler to prevent air from circulating inside the boiler.

We also recommend removing the pipe connecting the boiler to the chimney and plugging the flue gas nozzle.

The fuel main shutoff valve should be turned off if the burner is shutdown for an extended period of time.

4 Precautions required if the heating is stopped when there is a risk of freezing

We recommend the use of a correctly dosed antifreeze agent to prevent to the heating circuit from freezing.

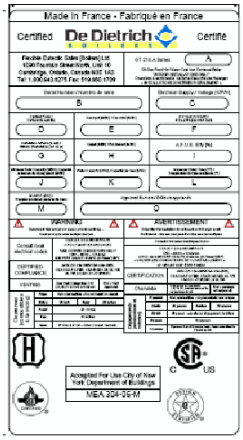
If this cannot be done, drain the system completely.

Drain the hot water tank and piping as well.

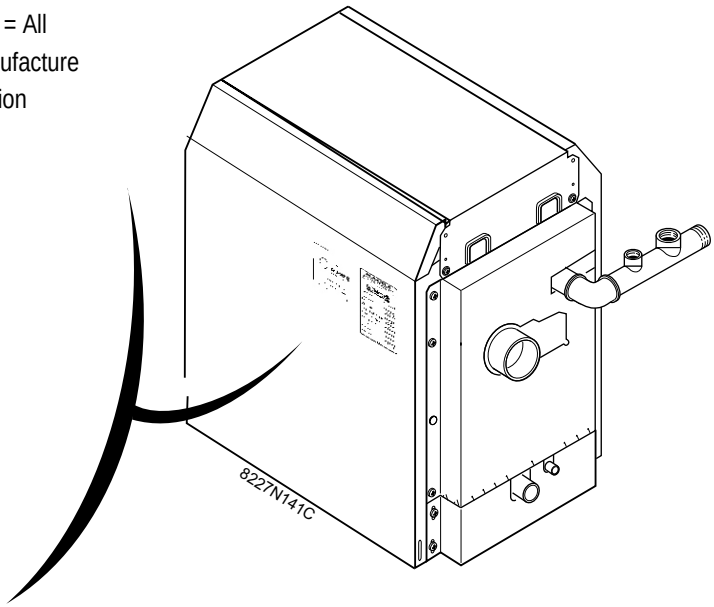
5 Boiler Rating & Approval Label

The identification plate fixed on the side of the boiler during installation is used to identify the boiler correctly. It also provides the main specifications of the boiler.

The serial number breakdown



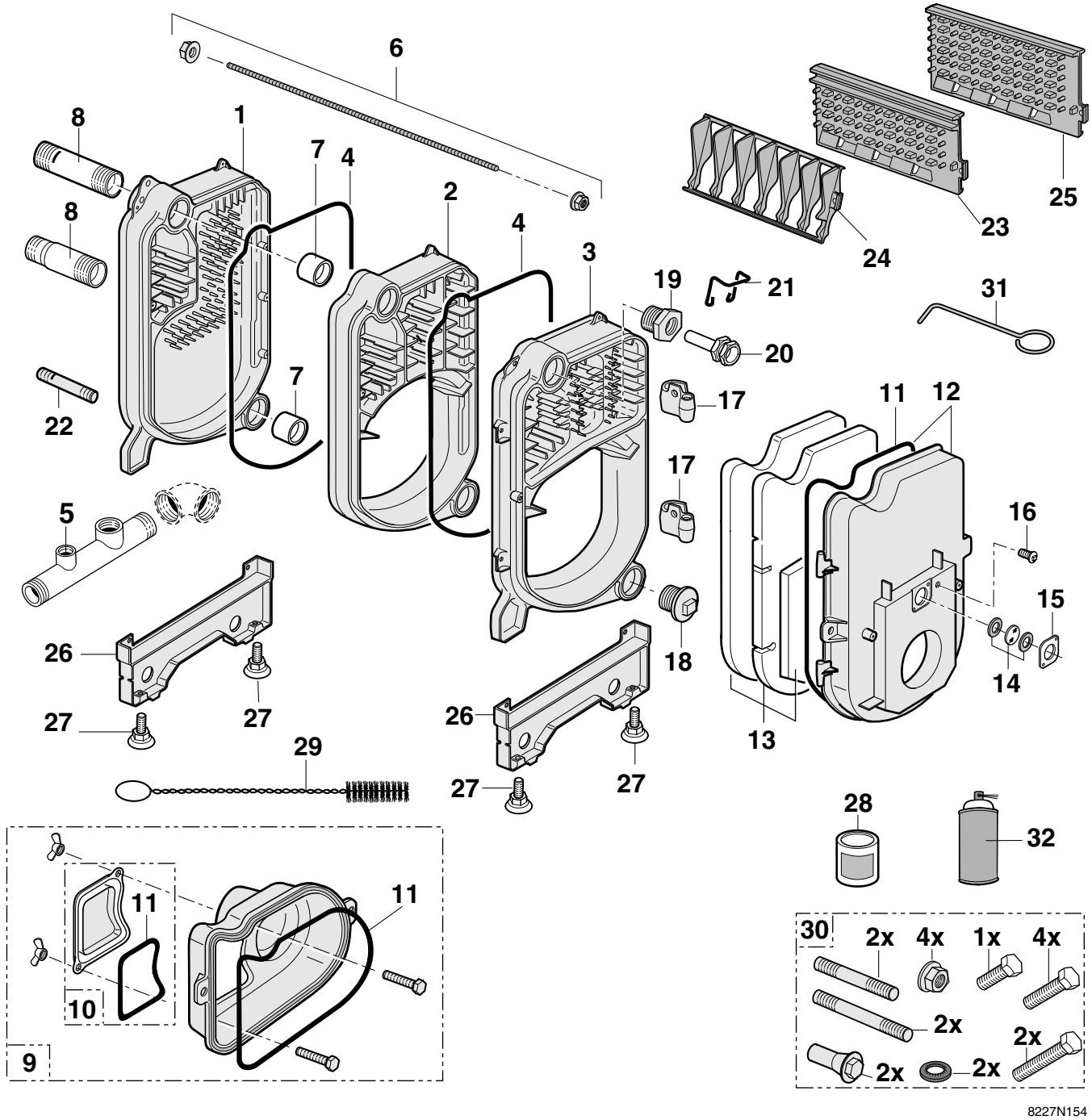
Example X XXXX XXXX XX XX XXXXXX
First digit = Approved packed boiler = A or Unapproved packaged boiler = U
4 digits = boiler series
4 digits = boiler model and control
2 digits = fuel type 03 = All
2 digits = year of manufacture
last 6 digits = production



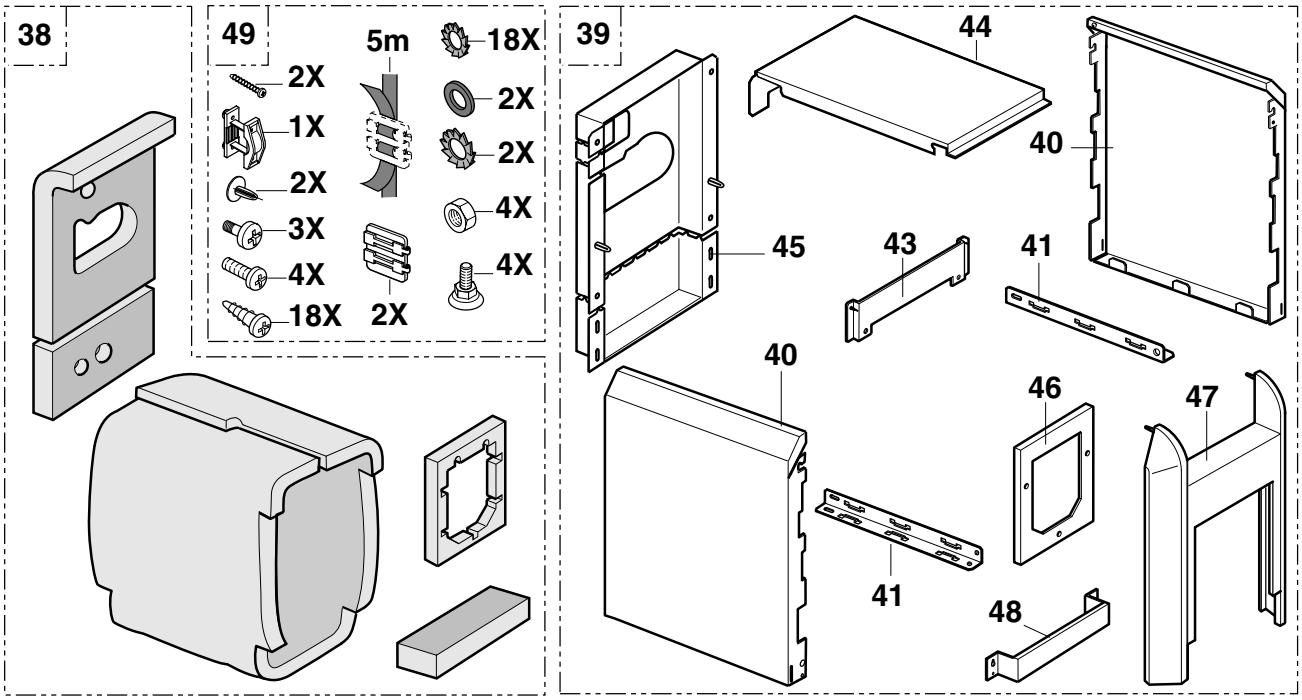
PR82274096E

When ordering spare parts, do not forget to state **the code number given opposite the description of the required part in the liste**.

BOILER BODY

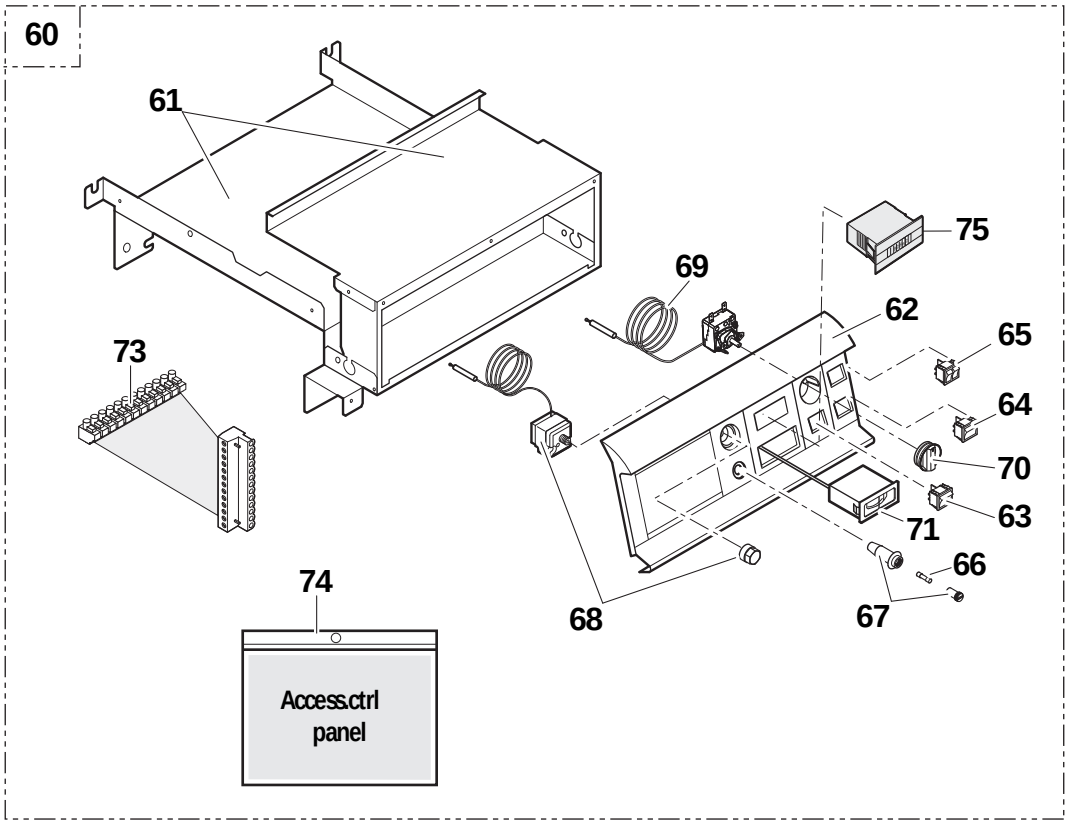


CASING + INSULATION



8227N062A

CONTROL PANEL



8199N501A

Ref.	Code no.	DESCRIPTION
		BOILER BODY
1	8227-0033	Rear section, GT 210
2	8227-0031	Intermediate section, GT 210
3	8227-0032	Front section, GT 210
4	9508-6036	8 ø silicone seal
5	9754-9101	Flow pipe 4, 5 sections
5	9754-9151	Flow pipe 6 to 8 sections
6	8227-5506	M 8-440 assembly rod, 4 sections
6	8227-5507	M 8-580 assembly rod, 5 sections
6	8227-5508	M 8-700 assembly rod, 6 sections
6	8227-5509	M 8-820 assembly rod, 7 sections
6	8227-5510	M 8-1000 assembly rod, 8 sections
7	8336-0507	Painted nipple
8	9754-9150	1"1/4 outlet/return tube, 4 or 5 sections
8	9754-9149	1"1/2 outlet/return tube, 6-7 sections
8	300001330	1"1/2 outlet/return tube, 8 sections
9	8227-8503	150 ø painted nozzle, 4 or 5 sections
9	8227-8504	180 ø painted nozzle, 4 or 5 sections
10	8227-5511	Sweeping trap + seal
11	9508-6032	10 ø silicone fibreglass seal
12	8227-8531	Complete burner door, 4 or 5 sections
12	8227-8532	Burner door, 6-8 sections
13	8227-5504	Complete burner door insulation, 4 or 5 sections
13	8227-5505	Complete burner door insulation, 6 or 8 sections
14	8015-7700	Sight glass + seals
15	9757-0027	Sight glass flange
16	9495-0050	1/4" no. 290 plug
17	8227-0201	Adjustable painted hinge
18	9495-0249	1 1/2" plug NR 290
19	9494-8312	1 1/2" plug with 1/2" tapping
20	8500-0027	Thimble tube
21	9758-1286	Thimble tube spring
22	9754-9152	Draining tube
23	8227-0011	$14^{12/16}$ long central baffle
23	8227-0017	$11^{13/16}$ long central baffle
24	8227-0012	Left-hand baffle
24	8227-0020	Left-hand baffle, 7 or 8 sections
25	8227-0018	$14^{12/16}$ long right-hand baffle
25	8227-0019	$11^{13/16}$ long right-hand baffle
26	8227-0202	GT 210 painted height converter
27	9786-0646	Adjustable foot
28	9430-5027	Coating material for nipple (300 g)
29	9696-0225	$30^{5/16}$ long brush
29	9696-0226	$47^{1/4}$ long brush

Ref.	Code no.	DESCRIPTION
30	8227-8502	Bag of fasteners for body
31	9602-0671	Hook for baffles
32	9434-5102	Retouching spray paint - anthracite grey
32	9434-5104	Retouching spray paint - ivory
		INSULATING MATERIAL
38	8227-5512	Complete body insulation, 4 sections
38	8227-5513	Complete body insulation, 5 sections
38	8227-5514	Complete body insulation, 6 sections
38	8227-5515	Complete body insulation, 7 sections
38	8227-5516	Complete body insulation, 8 sections
		BOILER CASING
39	8227-8514	Complete casing, 4 sections
39	8227-8515	Complete casing, 5 sections
39	8227-8516	Complete casing, 6 sections
39	8227-8517	Complete casing, 7 sections
39	8227-8518	Complete casing, 8 sections
40	8227-8524	Complete side panel, 4 sections
40	8227-8525	Complete side panel, 5 sections
40	8227-8526	Complete side panel, 6 sections
40	8227-8527	Complete side panel, 7 sections
40	8227-8528	Complete side panel, 8 sections
41	8227-8005	Lower side piece, 4 sections
41	8227-8014	Lower side piece, 5 sections
41	8227-8015	Lower side piece, 6 sections
41	8227-8016	Lower side piece, 7 sections
41	8227-8017	Lower side piece, 8 sections
43	8227-8543	Complete rear upper crossbar
44	8199-8830	Complete cover, 4 sections
44	8199-8831	Complete cover, 5 sections
44	8199-8841	Complete cover, 6 sections
44	8227-8529	Complete cover, 7 sections
44	8227-8530	Complete cover, 8 sections
45	8227-8558	Single-piece rear panel
46	8227-0504	Painted furnace door panel
47	8227-8512	Complete GT 210 front panel
48	8227-8544	Painted lower front panel
49	8227-8513	Bag of fasteners for casing
		CONTROL PANEL (DR 90)
60	8199-8777	Complete control panel
61	8227-8580	Complete component support
62	9750-9009	Electromechanical front plate
63	9532-5027	Two-pole green On/Off switch
64	8500-0034	STB Test switch
65	9532-5103	Reversing switch
66	9654-7019	10 A fuse

Ref.	Code no.	DESCRIPTION
67	9655-0069	Clip-in fuse-holder (4.8 x 0.5)
68	8500-0032	110° C safety thermostat
69	8500-0002	30 - 90° C setting thermostat
70	8218-8973	Setting buttons + pins
71	8536-5155	GM flat thermometer
72	8199-4906	CP electrical circuit
73	8227-4908	Sensor wiring
74	8199-8984	Fasteners + accessories for control panel
75	9536-2632	Hour run meter 100/130V

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In the interest of customers, DE DIETRICH THERMIQUE are continuously endeavouring to make improvements in product quality.
All the specifications stated in this document are therefore subject to change without notice.